THE AMERICAN GAS LIGHT JOURNAL

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[OFFICIAL NOTICE.]

Where to Find the Western Gas Association's Exhibit, and the Custodian Thereof, at the World's Fair.

To the Fraternity: The exhibit of the Western Gas Association, at the World's Fair, St. Louis, is located in Section 33A, Liberal Arts Building, where Mr. Fred. R Persons, who is in charge of the same, will always be on hand to receive visitors and to explain anything that requires explaining.

[OFFICIAL NOTICE.]

Twenty-Seventh Annual Meeting, Western Gas Association.

OFFICE OF SECRETARY,
NEW ALBANY, IND., May 19th, 1904.

The Twenty-seventh Annual Meeting of the Western Gas Association will be held at St. Louis, June 14, 1904, and will be called to order at 10 o'clock A.M., by the President, Mr. F. H. Shelton, of Philadelphia.

The sessions of the Association will be held in the Gas Exhibit Department of the Louisiana Purchase Exposition, which is under the direction and control of the Western Gas Association.

On June 15th and 16th will be held the sessions of the Gas Congress of all American Gas Associations, of which the Western Association is a member.

On account of the Western's session being limited to one day, the paper list will be as follows:

"Low Candle Power Gas," by Mr. William Henry White, of New York.

"Coal Projectors," by Mr. F. H. Shelton, of Philadelphia, Pa.

"Wrinkle Department," Edited by Mr. Wm. E. Steinwedell, of Cleveland, O.

The Western Gas Association will contribute the following papers, to be read at the Congress of the Gas Associations of America:

"Gas Inspection," by Mr. Ira C. Copley, Aurora, Ills.

"Station Meters," by Mr. Donald McDonald, Albany, N. Y.

"The Labor Question," by Mr. F. H. Shelton, Philadelphia, Pa.

Railroad Rates.—The railroads composing the various Passenger Associations have granted rates to St. Louis during the Exposition cheaper than those granted on the certificate plan. There are several classes of rates, as follows:

Central Passenger Association, covering the territory bounded on the North (with the exception of the State of Michigan) by the Great Lakes between Chicago and Buffalo; on the East by Pittsburg and Buffalo; on the South by the Ohio river; on the West by Chicago, the Illinois and Mississippi rivers.

Season tickets, good from April 15th to December 15th, 1904, at 80 per cent. of usual rates; 60-day tickets, 80 per cent. of usual rates, where single way tickets amount to less than $3.75. One and one-third fare for round trip where the usual one way rate is more than $3.75.

One and one-fifth rate tickets, good for 10 days for round trips from points from which one fare is $8 or more. The remaining Passenger Associations, comprising nearly all the territory outside of the Western Passenger Association, announce rates as follows: Season tickets 80 per cent. of double one-way rate; 60-day excursion tickets, 1½ fare for round trip; 15-day excursion, rate one fare plus $2 for round trip ticket.

The Southeastern Association, however, where the distance is more than 350 miles from St. Louis, charges one fare plus $2.25 for round-trip ticket.

A consultation with the passenger agents in the various localities will secure rates to St. Louis, with the privilege and restrictions imposed by the different rates obtainable.

The Hotel Jefferson will be the Association's headquarters, and Mr. E. G. Cowdery, Chairman of the Committee of Arrangements, announces that "The Committee will be represented at all times, in this location, by efficient help to be of assistance to delegates in any way they can."

The Committee of Arrangements announce rates at the various Hotels as follows:

Hotel Jefferson: $7 to $12 per day for room; privilege given for two persons to occupy a room.

Planters' Hotel: $3 per day per person; European plan. The hotel will place four persons to a room.

St. Nicholas Hotel: $7 per day and upward per room; European plan. Two persons privileged to occupy a room.

St. James Hotel: $7 per day per room, with privilege of two to four persons to each room.

The "Inside Inn," located upon the Fair Grounds, offers the following rates:

European Plan Includes Lodging and Daily Admissions.	Number of Rooms.	American Plan Includes Lodging and Daily Admissions.
$1.50 a day.....	500	.....$3.00 a day.
2.00 "	500	..... 3.50 "
2.50 "	500	..... 4.00 "
3.50 to 5.50 a day.....	500 with bath	....$5.00 to 7.00 "

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SMITHSONIAN DEPOSIT.

Single meals: Breakfast, 50 cents; luncheon, 50 cents; evening dinner, 75 cents. *A la carte* service at moderate prices.

Persons desiring to join the Association will have application blanks mailed to them upon application to the Secretary.

JAMES W. DUNBAR, Sec'y.

[NOTICE.]

Congress of American Gas Associations.

SECRETARY'S OFFICE,
58 WILLIAM ST, N. Y. CITY,
May 4, 1904.

The following Associations have agreed to participate in the Congress of American Gas Associations, to be held in St. Louis, June 15th and 16th: American Gas Light Association, New England Association of Gas Engineers, Western Gas Association, Pacific Coast Gas Association, Ohio Gas Light Association, Southwestern Gas, Electric and Railway Association, Michigan Gas Association, Wisconsin Gas Association, Kansas Gas, Water and Electric Light Association, Society of Gas Lighting, Guild of Gas Managers. The concurrence of all these Associations insures a successful Congress.

The following papers have been definitely promised:

"The Labor Question," by F. H. Shelton, Philadelphia, Pa.

"Gas Association Work," by Henry L. Doherty, New York city.

"Station Meters," by Donald McDonald, Albany, N. Y.

"Gas Inspection," by Ira C. Copley, Aurora, Ills.

It is intended to secure also either a paper, or a series of short papers, on the subject of "Inclined Retorts versus Horizontal Retorts Operated by Machinery."

Announcement as to Entertainment.—The sub-Committee on Arrangements for the Congress of American Gas Associations has planned to have, for the entertainment of the members of the Congress, a special entertainment on the "Pike," the evening of Wednesday, June 15th, and a banquet at the Hotel Jefferson the evening of June 16th. For the benefit of those who are not "posted," it may be explained that the "Pike" corresponds to the "Midway" at the Columbian Exposition in Chicago in 1893. The ladies will be given, on the afternoon of Thursday, a lunch and a ride round the Exposition grounds. Coupon tickets, each of which will entitle the holder to take part in the entertainment provided for members, and also entitle two ladies of his own family to take part in the entertainment provided for the ladies, will be sold to members of the Congress at the price of $5 per ticket. Extra tickets will have to be procured for ladies not included under above provision.

As the Committee must know at an early date how many are to be provided for, you will greatly facilitate its work by mailing to the Secretary at once the inclosed postal card, after filling it out, so as to show whether or not you expect to attend the Congress, and, if you are going to attend, the number of tickets that you wish to take. The sub-Committee is also having prepared special badges, which can be obtained by members of the Congress, that will undoubtedly be valued by them as souvenirs of the occasion.

A. E. FORSTALL, Sec'y.

BRIEFLY TOLD.

THE EXHIBIT AT THE WORLD'S FAIR OF THE WESTERN GAS ASSOCIATION.—"R. F. P.," writing from St. Louis under recent date, says: "One of the most interesting and comprehensive exhibits in the Palace of Liberal Arts, at the Louisiana Purchase Exposition, St. Louis, is that of the Western Gas Association, which occupies space in the exact center of the floor. It is the first time that a complete technical display of gas apparatus has been made at an Exposition, and the Association has been very successful in its efforts to provide an exhibit that would properly represent the industry, the apparatus shown having been collected from gas companies and manufacturers in all parts of the United States and England. The developments in the apparatus for using gas are shown by exhibiting, side-by-side, the crude devices which were first in use and the preseut improved methods. The evolution of the gas burner is shown in this way, every sort of a burner being exhibited, from the original models to those of the present day. The development of gas arc lights, gas stoves, furnaces, meters, valves and the systems of laying mains are all exhibited in like manner. Gas has been piped to all parts of the booth, and all the burners, both upright and inverted, will be shown in actual operation. Some of the very latest improvements in gas apparatus that have not yet come into common use are exhibited. The front of the latest model of a station meter is shown with straight reading dial; a retort charging machine operated by electric power; new models of prepayment meters; new street lamps, and chemical apparatus for testing gas, all the most up-to-date in the world. Several articles of historical value add a little sentiment to the exhibit. An old oscillating water pump, which was used in pumping water for the New Orleans gas works in that city about 75 years ago, is shown, together with several other ancient and curious machines. The crowning feature of the exhibit is an exact reproduction of the Government lighthouse at Southwest Pass, Louisiana, which stands, at the most southern point of land of the Louisiana Purchase, as a beacon light for vessels on both the Mississippi river and the Gulf of Mexico, throwing its beams up through the Mississippi Valley, the natural gateway to the territory included in the Purchase. This old lighthouse was among the first erected by the Government in the Territory, and has been in constant use ever since. The original is 125 feet high, and the reproduction is exactly one-fourth actual size in every detail. Gas lamps of 2,000-candle power are to be used in the model, and several sea gulls have been so mounted that they appear to be circling about the lamp. The model is painted a dark red with green blinds to the cabin windows, and is in every way a replica of the original signal tower. The Western Gas Association, which numbers at least 400 gas engineers of the Middle-West in its membership, when meeting in St. Louis the 14th prox., will have much to be proud of, as will the American Gas Congress, that is consistent and coeval with the aid of the Western Association when the meetings of both are brought off in the announced places."

NOTES—

MR. GEORGE FULLERTON, JR., who for many years acted as Superintendent of Distribution for the Buffalo (N. Y.) Gas Company, has resigned that position in order to accept the place of Superintendent of the Mohawk Gas Company, Schenectady, N. Y.

MR. F. M. SACKETT has been elected a Director in the Louisville (Ky.) Gas Company, vice the late Mr. Kilbourne W. Smith.

WE regret to have to chronicle the death of Mr. Ogden B. Gilmor, who died at his home in Norwich, Conn., the evening of the 16th inst. In April, 1863, Mr. Gilmor was appointed Superintendent of the Norwich City Gas Company, and served it as such with zeal and success, until its ownership changed hands, in 1897.

The Gas Congress and the Gas Industry.—No. II.

By MR. C. J. R. HUMPHREYS.

In a previous article[1] I tried to deal in a very brief way with the relations which should bind the gas fraternity to the forthcomiug Gas Congress, not in the thought that in so doing I could put before the readers of the JOURNAL any novel treatment of the subject, but being perfectly content if I could, even in a small degree, increase the interest which the gas fraternity feels in the Gas Congress; and in passing I remarked that the gas industry, as a whole, was equally interested in the success of the Gas Congress, and the financial powers of the business should consider it not a burden but a privilege and pleasure to help make the Congress worthy of the industry with which its name is linked.

Great changes have come over the gas industry in the last quarter of a century and it is but right that those interested in its progress should be alive to the changes which time is working. A time there was when the use of gas in the private residence was confined to the flickering light here or there, and leaving to some more portable and cheaper illuminant the privilege of ministering to the wants of those whose duties or pleasure called for light in eventide. At that time a gas stove was a rarity, whether for cooking or heating, and used but in an intermittent way to bridge over the vagaries of some more common source of fuel for heating and cooking.

A time there was, but not so far in the past, when the introduction of the, then new, electric light seemed to forecast the extinction of the gas industry, and stockholders were very fearful as to the future of their properties; but all this was of the past, and the present is with us to use or abuse as we will.

And what is the gas industry of to-day which is in our keeping? It is one of the great industries of the present time, great not only in the magnitude of its works, great not only in the magnitude of its distributing systems, great not only in the capital employed in the business, but great in the role it plays in ministering to the comfort of the world, great in the part it plays in advancing the arts and sciences, and greater still in the part it plays as the one reliable source of light, heat and power acting out its part of usefulness by night and by day.

No longer is the gas indusrty distraught by the thought that some new illuminant may be brought forth on the morrow to threaten its stability, and reduce its power and place among the industries of the day; on the contrary we find it pushing its way into new fields every day. The invention of the incandescent gas burner has brought back much business which for a while belonged to the incancandescent electric light. The grouping of these incandescent burners in various

1. See JOURNAL, May 9, 1904; p. 722.

forms and numbers has threatened the electric arc in the vantage ground it fought for so strenuously and nearly won; the brains which have developed the gas stove into a household necessity, the skill with which gas appliances for the arts and crafts have been developed to meet existing needs, and to open up new fields into which the arts could enter, these and other lines which have been pursued have wrought out the gas industry of to day.

The magnitude of this industry and the outlook for its future demand of those controlling the business a broad and comprehensive administration of its affairs, not only to hold its present status among kindred industries, but also to insure for the future the prosperities which are its inherent rights.

And it is right here that the Gas Congress comes in as a power serving these ends, by the publicity given to the gas industry and through its educational effect on the members of the gas fraternity, who are first and always the bulwarks of the industry they protect.

The Gas Congress aims to bring together the members of the Gas Associations from all parts of the country, and surely the position of the industry must be strengthened by the discussion of the various problems of gas engineering by men from such divergent parts of the country; and it surely is the duty of those who are financially interested in the industry to see to it that as large a representation as possible from their respective companies attends the Congress to absorb the broader views which come from so large a gathering, and which are so much in harmony with the broader position which the gas industry has now assumed. Thus may the Congress be, in the eyes of the public, worthy of the industry it represents, and in thus providing for the attendance at the Congress of the officers of their respective companies, they not only aid the interests directly committed to their care, but they help, if all would do their duty, in making the Gas Congress of such magnitude and of such importance as to attract the favorable attention of the public.

[Prepared for the JOURNAL.]

Queer Artificial Lights of the Japanese.

By "G. D. R."

While travelling in Japan at the outbreak of the recent war I had opportunity to observe some of the peculiar forms of light employed in stores, houses, factories, opium dens and other places. Some of the systems of lighting in Japan could be greatly improved by adopting American ideas. In the city of Nagasaki one sees a great variety of lights, and the advent of the American dealer and manufacturer of lighting materials and apparatus, is everywhere evident. One sees, first of all, the fine system of electrical lighting which has been put in under American contracts for lighting the city streets, parks, subways, public buildings, etc. The people of the city have arranged for utilizing electric lighting in part in their homes and business houses; but the bulk of lighting in Japan is by means of crude contrivances of old, such as the candle, the tallow dip, the oil lamp, the burning fagots, the odd, little finger-fed oil jets, etc. The annexed illustrations are given to assist in explaining some of the Japanese modes of obtaining light for their homes and business houses. One sees men in the city of Nagasaki, and other parts of the Empire, engaged in the lamp trade along the street side. These people repair lamps and candles. Sometimes a Japanese lad will come forward to the repairman with a cocoanut shell, bowl-light, with a slight leak, and the workman soberly plugs the hole in the shell. They say that even hollowed dry shells of squash are used.

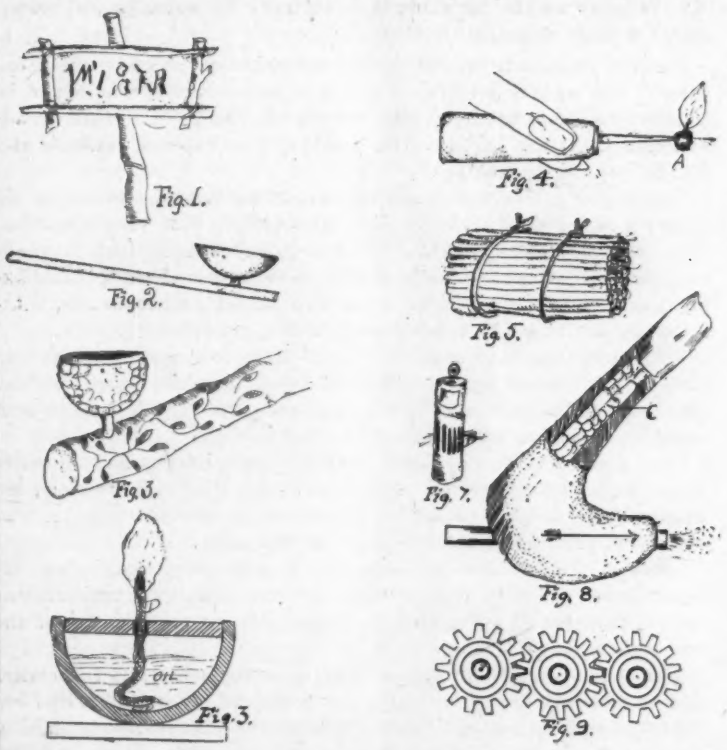
The repair man's sign is seen in Fig. 1. Sometimes he sells lamps and candles. His shop may be the street walk with a little hand bench, or he may have a corner in one of the stores of the street. The first-class lamp dealers may occupy entire rooms. As a rule, however, the street corner lamp dealer is prominent. He has about him lamps of strange form, as in Fig. 2, in readiness for making up for sale. This consists in a bowl of sheet metal, cast in a sand mold, or some clay which has been worked down and baked. I saw some of the bowls made of shell. The bowl is adjusted to a handle of wood; the wick of cotton or linen is supported in the bowl, either by a little piece of flat metal or wire extending across the top from side to side. The oil is placed in this bowl, the wick is lighted and a miniature flame results which will light up to a limited extent. One of the artistic styles of bowls and handles of the oil burning lamp is exhibited in Fig. 3. The writer saw some most elaborate lamps of this order. The principle of the burning wick in the bowl is, of course, of the crudest origin; but the elaborate carvings on the bowls and stems of pipes of this nature are wonderfully attractive. These ingeniously engraved lamps sell for as low as $1. Yet I saw some on which workmen had labored two or three days in making. The wage scale is so low in Japan that even these artistic lamps, on which a man has spent several days in making up, engraving and polishing, sell for a dollar or two.

Fig. 3 is a sketching of the typical small oil light used throughout the Empire; in fact, through all the Orient and the tropics of the Philippines these forms of oil lights are in general service. Oftentimes the natives make these lights of cocoanut shells. Sometimes they are molded from clay. The wick support is marked *D*.

Lights of Worship.—I noticed a singular mode of worship in the house of one of the Japanese merchants. He had a bowl, near an altar in a hallway corner of his home, all protected by a drawn curtain. He pulled the curtain to one side and exhibited the image of one of the gods of the Empire, at the feet of which were little rolls of excelsior-like wood fiber. The wood was reddish in color, and it had been saturated in oil. The Japanese picked up a little awl like tool from the altar and kissed it. Then he selected a little curled ball of the excelsior stuff and ignited it. This made a brilliant little flame, as at Fig. 4, which lasted for 2 or 3 minutes, during which time the man bowed in worship.

Roll of Match Wood.—Fig. 5 is a sketching of a combustible wood of greenish tint that the Japanese get from the bamboo jungle. After the wood has been subjected to the action of the dampness of the jungle of the bamboo growths for a number of years it makes first-class material for matches when properly arranged, dried and soaked in oil. It is a queer match, however, as it can be used only to convey a flame from one point to another. The regular market Japanese matches are used to make the original light, while the jungle sticks are used for retaining a flame several minutes, and for communicating it from point to point. Fig. 7 is one of the little tin lanterns that one sees now and then in the land of the Japanese.

The Japanese are great lovers of little night and pocket lamps. If American makers of lamps were to send a lot of little nickel light lamps to Japan the sale would be large, if prices were moderate. The tin cylinder in Fig. 7 is cut with slits at *B*, and the candle or oil light inside sends forth its light through these. These cylinders are all sizes, from 2-inch diameter to 20 inches. One of the blowpipe light combinations is seen in Fig. 8. The oil is arranged to feed from a reservoir at the top of the strange channel affair, and to feed the oil through some pieces of felt, *C*. This felt is packed in the channel of the pipe as shown. A tube is inserted through the base of the pipe and the user blows through this in the direction of the arrow. The oil fumes from the sponge-like mass are ignited at the nozzle end of the tube and the air pressures from the tube result in a blowpipe in which the blast is quite strong and a good and effective jet of flame is secured for soldering, etc. Fig. 9 is a train of brass gears arranged to govern an oil feed



of a lamp. These are shown to illustrate the ingenuity of the Japan lamp workers. With the increased temperature due to enlarged flame, a bulb would rise and lift a lever which lever would elevate the pawl working the gear and, therefore, the gears would cease moving and stop the feed, until the flame lowered and the temperature fell, thereby permitting the lever to again fall, the pawl to act and the oil to feed once more. There is a great field for the American lamp in Japan. Moderate priced lights would sell well. Carbide gas outfits would meet with good demand.

[Revised by the Secretary.—Concluded from page 810.]

TWENTIETH ANNUAL MEETING, OHIO GAS LIGHT ASSOCIATION.

Held in the Hollenden Hotel, Cleveland, O., March 16, 17 and 18, 1904.

Third Day, March 18—Morning Session.

The President introduced Mr. Henry I. Lea, of Fort Wayne, Ind, who read the following paper on

WATER GAS TAR USED IN GENERATORS FOR ENRICHMENT.

Inasmuch as but few of our theories materialize in practice, it is proposed, in this paper, to rather ignore such *ignes fatui* niceties as are represented by tables of vapor tension and of ultimate composition. In isolated cases, under laboratory conditions, close calculation is, of course, demanded, and this subject itself admits of much refinement of detail. Its principal attraction, however, centers in its commercial aspect, for here it has possibilities that may be shown in black and white on the credit side of the annual balance sheet.

In the ordinary course of events the gas company sells oil tar, not for what it is really worth, but for such price as the tar magnates see fit to offer. Consequently, oil tar as such is not at present very much of an asset. Unfortunately, gas companies have felt compelled to accept the tar magnate's version of the laws of supply and demand. This version exists solely because the tar men have realized that if they could but hold off on purchases for given periods the gas companies would be compelled to accept low prices through sheer lack of storage facilities. In other words, the tar men have actually provided such storage, in tankage and in finished product, with the natural result that the gas company must pay for it.

The gas company's conversatism is paying for the tar man's venture, a state of affairs less pleasing than annoying. As counter-irritants, however, we have three openings:

1. We may provide such storage capacity as will enable us to hold our product for fair markets.
2. We may work up the tar itself, into roofing paper, etc.
3. We may use the tar made as an enricher for water gas, in practically the same way as oil is used.

The first alternative ordinarily has the objection of great initial expense. The second involves a thousand technicalities that might be better cared for in an independent concern. The third has all the advantages of the first two, involves practically no expense whatever and brings up no complications.

Theoretically, the varying proportions of free carbon in oil tar would render it rather difficult to handle successfully. This very objection, however, only calls attention to the conditions rendering such inequalities possible, and reminds us that the entire process of water gas making is carried on with so many variables, that an additional one, within certain limits, could be traced only with great difficulty.

Various successful attempts have been made to convert coal tar into gas—see the Peebles process, the Dinsmore process, the Mond process, the Lowe coke oven process, etc.—but comparatively few have been made in connection with oil tar.

Omaha and Kansas City (both U. G. I. plants, having for the writer no available data) have for some time used oil tar in generators, but when making down runs only. When used so sparingly, the tar has, obviously, but slight chance to prove its real value.

There have been a few other attempts in this connection, but, as far as the writer has been able to learn, nothing definitely favorable was arrived at under the older method of injection tar over the top of the fuel bed, for down runs only.

The Detroit City Gas Company has, however, gone into this matter quite extensively and, by spraying the preheated tar over the fuel bed for "up"-runs as well as "down," has obtained some very promising results. Most of the experiments were carried out at Station "B" on one of a pair of 10-foot settings, making as high as 2,800,000 cubic feet per day. The tar, however, was used in only one machine at a time. At frequent intervals the use of tar was discontinued, but with no appreciable difference in results. In other words, such quantities of tar as were used did satisfactorily replace equivalent quantities of gas oil.

The ultimate test in this case, is, of course, the number of candles per gallon, assuming that the thermal value of product remains satisfactory, which within limits it does.

Through the courtesy of the Detroit City Gas Company the writer is in possession of the detail records of operation and in the following table, presents a brief summary covering 4 representative months' operation.

Month.	Gals. oil used in Carburetter.	Gals oil tar used in Generator.	Total Enricher (gals.)	Per Cent. Tar.	Water Gas Made.	Gals. Enricher per M.	Average Candle Power.	Candles per gallon Enricher.
June.	164,530	10,980	175,510	6.3	42,066,000	4.17	23.01	5.51
July.	125,528	15,072	140,600	10.7	32,554,000	4.39	22.91	5.22
Aug..	145,236	52,240	170,476	14.8	43,493,000	3.85	21.21	5.51
Sept..	136,060	17,680	153,140	11.1	40,022,000	4.24	22.64	5.34

The daily records above mentioned also show that, when oil alone was used, an average of 5.4 candles per gallon was obtained throughout this same period. By the way, the figures in column showing "Candles per Gallon" represent gross results, the net being of course about 10 per cent. to 15 per cent. higher.

The above table shows clearly that the cause of variable results, as to "candles per gallon," is not the use of tar, for June shws the same number of candles per gallons when only 6.3 per cent. tar was used, as does August, when tar used equalled 14.8 per cent. And in both of these months better results were obtained than are shown by an extended series of tests using oil alone.

Let not this statement be taken as indicating a higher value for tar than for oil, for such interpretation would be obviously incorrect. But the record does convincingly establish the fact that the use of tar does not necessarily lower the efficiency of operation nor involve noticeable changes in the finished product.

There are doubtless certain re-arrangements of hydrocarbons which might be traced by analysis at the plant, but for commercial purposes the water gas made while using oil tar is fully the equal of water gas as ordinarily made, volume for volume. And this satisfactory result is reached with very little modification of the ordinary water gas plant, the entire scheme being to pump preheated oil tar through a meter and then under about 30 pounds pressure through an ordinary oil spray on to the top of fuel bed in generator. The tar pump is controlled automatically, as is the oil pump, and the tar spray is thrown on with the oil spray on the drop of the stack valve. The tar spray requires more steam during periods of blast than do the oil sprays, but this of course is a matter of small moment.

The use of tar involves no additional charge whatever for labor, and the ordinary operator can readily watch the additional spray. No special precaution is taken in the removal of water from the tar, the preheating being done solely to facilitate handling. There are, in fact, no serious objections of a practical nature to the use of oil tar. The question as to its use must, therefore, be decided wholly by relative market values of oil and tar, for obviously such plants as obtain as much per gallon for tar as the oil costs them, have nothing to gain by the use of tar in generator. Such cases are, however, comparatively rare. Furthermore, the question hinges largely on quality of oil used as affecting quantity of tar made.

Mr. W. E. McKay, of Boston, has perhaps made as careful records on this point as are to be had, and the following are his results:

Oil Tar Produced.		Per Cent.
With naphtha,	maximum	3.5
"	minimum	1.7
"	average	2.6
With gas oil,	maximum	18.3
"	minimum	12.3
"	average	15.6
With crude oil,	maximum	15.1
"	minimum	11.8
"	average	13.5

The above percentage represents tar practically free from water, and although the results with the crude and gas oils are rather higher than ordinarily given the accompanying data would indicate highly efficient working of apparatus. Disregarding the plants using naphtha as being too few in number to be of consequence, a notably conservative estimate of tar produced would place the figures at 10 per cent. of oil used. Assuming also that tar production is practically a constant percentage, regardless of size of apparatus, we are prepared to carry out our calculations for any given plant along strictly conservative lines. Before doing so, however, the writer would call attention to the importance attaching to concerted action by the gas companies of the United States in this connection. For this purpose we refer to Census Bulletin No. 123, which shows that during 1900, 67,093,553,000 cubic feet of gas were

sold, and that 194,857,296 gallons of oil were used. It is estimated by Census officials that about 75 per cent. of all the gas now used in the United States is water gas, and over 50 per cent. of the tar made is oil tar.

In 1900 oil tar alone amounted to about 24 million gallons. Even with the present enormous sales, the tar magnates are not noticeably distressed by excessive production. They still conduct their business without apparent loss and give no indication whatever of lack of market for their wares. A fair deduction is that the markets for tar products are more than keeping pace with our increased production of raw material.

Up to date, however, the gas companies have not been advised of these favorable conditions through any substantial increase of market value of raw tar. Is it not reasonable to suppose that, if 50 per cent. of present tar output be suddenly withheld from the market, a substantial increase in market value would at once follow? In itself, this surely is a conservative proposition, for there are very few plants in the United States that cannot actually make money under present market conditions, by simply using oil tar, as fast as made in generator. This immediately removes from market any temporary surplus and renders unnecessary the sometimes very expensive tar storage facilities. As an example of the operation of this scheme in practice, we assume that our plant is making daily 100,000 cubic feet of water gas.

Under usual conditions this plant will require 5 gallons oil per 1,000 cubic feet of gas made, and will produce at least 10 per cent. of tar. In other words, we have ½ gallon of tar capable of replacing ½ gallon of oil in the next "run."

Assuming that oil delivered costs this plant 4½ cents per gallon, and that oil tar brings only 2½ cents net, we find, on referring to "Exhibit A," that the use of all oil tar made (on 10 per cent. basis) would earn 5 per cent. dividends on $7,200.

CROSS OIL COST IN CENTS PER GALLON. PLANT CAPACITY PER DIEM. CU.FT

NET MARKET VALUE OF TAR IN CENTS PER GALLON

	100M	250 M	500 M	750 M	1000M
2	$18000	44000	82000	116000	146000
2¼	17100	41800	77900	110200	138700
2½	16200	39600	73800	104400	131400
2¾	15300	37400	69700	98600	124100
3	14400	35200	65600	92800	116800
3¼	13500	33000	61500	87000	109500
3½	12600	30800	57400	81200	102200
3¾	11700	28600	53300	75400	94900
4	10800	26400	49200	69600	87600
4¼	9900	24200	45100	63800	80300
4½	9000	22000	41000	58000	73000
4¾	8100	19800	36900	52200	65700
5	7200	17600	32800	46400	58400
5¼	6300	15400	28700	40600	51100
5½	5400	13200	24600	34800	43800
5¾	4500	11000	20500	29000	36500
6	3600	8800	16400	23200	29200
	2700	6600	12500	17400	21900
	1800	4400	8200	11600	14600
	900	2200	4100	5800	7300

CAPITAL ON WHICH INTEREST AT 5% PER ANNUM MAY BE PAID THROUGH THE USE OF OIL TAR IN GENERATOR.

Exhibit A.—In above calculations oil results were assumed as follows: In 100,000 plant, 5 gallons per 1,000; in 250,000 plant, 4¾ gallons per 1,000; in 500,000 plant, 4½ gallons per 1,000; in 750,000 plant, 4¼ gallons per 1,000; in 1,000,000 plant, 4 gallons per 1,000. It is also assumed that tar made equals 10 per cent. of oil used in each case and that all tar made is used in generator.

In a plant making 500,000 cubic feet water gas per day, the use of all tar made would, under same difference in market value, earn 5 per cent. dividends on $32,800. Similarly, for each 1 cent by which the gross price of oil exceeds the net market value of oil tar, a plant making 1,000,000 cubic feet water gas per day may earn 5 per cent. on $29,200. Note that previous figures were based on 2 cents difference.

In making the calculations, of which this Exhibit A is a summary, due allowance has been made for increased oil efficiencies with increased size of plant, as per note below table.

In view of the fact that this matter of using all oil tar as produced places the gas companies in immediate control of the price of over 50 per cent. of all tar produced, the writer wishes to urge the importance of most careful consideration of its advantages.

Discussion.

The President—This very valuable paper is certainly on an entirely new line. Its very exhaustive treatment of the subject will I am sure prove to be of great benefit to the gas industry. Are there any comments or inquiries?

Mr. Osborne—This seems to me to be a very comprehensive treatment of the subject in a paper that is very well prepared. Considerable thought must have been expended upon it. I would like to ask Mr. Lea if, in preparing this paper, he took into consideration any increased cost of running the apparatus in which he used this oil tar? From my experience in this matter it seems to me—although probably my conclusions may not have been correct—that the usage of tar necessitated an extra cleaning out of the checkerwork in a very short time. I have found that it filled up the carburetter and the superheater in a water gas set very quick. It is a question probably that Mr. Lea will be able to answer from his experiments. I can only say that the experiments made by us were partly with the idea of saving fuel as well as oil. That was the line on which I was working at that time. It has been some 2 or 3 years ago now. We used the method of heating described by Mr. Lea, or a very similar method, spraying it from the top of the generator. We found it took as much oil to produce the desired candle power with the oil tar as it did without it, and no appreciable result came from it, except that we had to rechecker our machine very soon.

Mr. Lea—From the results obtained at Detroit, it is apparent that if Mr. Osborne required as much oil in obtaining a given candle power when using tar as an additional enricher as when using oil alone, there must have been something wrong with his method of operation, inasmuch as the oil tar itself contains several valuable hydrocarbons. An authoritative analysis shows that oil tar contains light naphtha, toluol, benzine, anthracene cake (in itself containing about 8 per cent. of anthracene) and some pitch. I can, if Mr. Osborne wishes, give the percentages, although they would perhaps be of no material assistance at this point. As to the deposit on the checkerwork I will say that the use of oil tar need not increase this deposit as such deposit is dependent on the temperatures carried, and the working at Detroit has not shown any increased deposit on checkerwork due to the use of tar in the generator.

Mr. Harrop—I have no desire to criticize Mr. Lea's paper in the least, but it appears to me there are several things which he might have incorporated in his paper which would have been of some value perhaps to anyone who took the paper and attempted to repeat the experiments. I understand that the results are based on data from the Detroit City Gas Works?

Mr. Lea—Yes, sir.

Mr. Harrop—And I presume the form of apparatus was the Lowe form of Western Gas Company's construction?

Mr. Lea—Yes, sir.

Mr. Harrop—The oil used was the grease we get from the Standard Oil Company?

Mr. Lea—Yes; I am not sure about the Company it comes from. Mr. Butterworth can answer as to that.

Mr. Harrop—Well, it was that order of oil.

Mr. Lea—It was the regular gas oil used right along.

Mr. Harrop—Probably 36° B. specification.

Mr. Butterworth—Thirty to 32°.

Mr. Harrop—As to the nature of the tar produced and used in the setting. Have you any figures, Mr. Lea, on the quantity of water present in the tar as you find it in the generator, the percentage of naphthaline or of free carbon, or anything else that would bring out the exact conditions under which the tests were made.

Mr. Lea—No; about the only guide I could give as to that would be the presumption that about 5 to 9 per cent. would cover the range of water contained. I am not sure of that. There would be, however, somewhere between 5 and 9 per cent. water. I have no figures with reference to naphthaline.

Mr. Harrop—These matters are not of great importance; but what I am trying to do is to simply indicate that a paper like this has a certain value always, and if we can increase the accuracy of the statements of conditions under which we have operated in making these experiments it will increase to a very large degree the value of the paper, whereupon it will become a matter of record for reference at any time hereafter. The sets were of what size?

Mr. Lea—Ten feet 6 inches. Two sets.

Mr. Harrop—Do you know anything about the temperatures carried?

Mr. Lea—No, save they were considered normal.

Mr. Harrop—What effect did you find in re-using this tar?

Mr. Lea—The tar is heavier, but how much we do not know.

Mr. Harrop—The character of the tar is changed then slightly?

Mr. Lea—Yes.

Mr. Harrop—Those are only a few ideas that occurred to me during the reading of the paper, and I thought I would bring them out for the sake of having them on the record.

Mr. Robb—Did Mr. Lea, during his test of tar used, find any tar remained; if so, what amount or what per cent.?

Mr. Lea—You would use about 10 per cent., volumetrically; perhaps a trifle more. In many of these tests the percentage of tar ran beyond 10. In a few instances it ran as high as 40; but it goes to show that you can use a great deal more than you are producing. Without any deleterious effect on the quality of the gas, 10, 12 or 15 per cent. is regularly used.

Mr. Osborne—We have made tests along the same line, although I have no data that could be furnished at this time. A chemical test of the gas was taken after it left the washer each time. The heats were no higher, as far as we could ascertain. We attempted to run under normal conditions, using about ½ gallon of oil per 1,000 feet as near as we could fix it, and, as I have said before, we have not had any experience whereby it was necessary to clean out our checkerwork before, but the percentage of carbon that landed on our checkerwork in the carburetter was such that it demanded attention very quickly after we made the tests. It showed that that was the cause, for before and after we had no trouble. We made these tests over possibly 2 weeks. Some of the people in the Company had taken the trouble to go to Kansas City where they were using tar, and they, coming back strong advocates of it, carried on these tests. Whether the tests were made under the best conditions or not I cannot say, but all these experiments and the chemical analysis made went to show that the results were such that we did not adopt the use of this system. You may take that for what it is worth. I do not wish to say anything which would keep anyone else from using tar, because as Mr. Lea has very plainly stated there is a time coming, and very shortly, when we will have to find a market for our tar. The increase of coke oven work with the tar coming therefrom and its quality being so much more valuable than the water gas tar, raises a problem which we will have to face as to the disposition of our tar. It seems to me there will be a time when we will have to get a better market for it, or take such prices as will hardly be worthy of our consideration. That is the way the tar people talked to me anyway when I tried to get a contract for tar for the coming year. Of course, there have been many suggestions about using it under the boilers, etc. I would say that I found such to be a very good place to use it, but as I understand Mr. Lea's paper, he brings out a more valuable way in which to use it.

On motion, a vote of thanks was tendered to Mr. Lea for his paper.

The President—The next paper, on the subject of

FUEL AND GAS APPLIANCES,

was prepared by Mr. J. C. Andrews, of Denver, Col. As the author is not present, I will ask Mr. Paul Doty, of Denver, to read the same. Mr. Doty read as follows:

The name fuel gas appliance carries with it thoughts of a day-load—something that will increase the day output of gas—and thus reduce the investment in plant and distribution system per 1,000 feet of gas sold. The distribution system of any gas plant must be equal to the maximum hourly demand, and this usually occurs between 6 and 7 in the evening. At other hours of the day more or less of the capacity of the system is idle, and, therefore, earning no return on the investment. How to bring the minimum demand as near as possible to the maximum demand is a most vital question to gas managers. The fuel gas appliance would seem to answer this question, and more especially the industrial fuel gas appliance, because usually it is operated only during the daylight hours. Having decided this, the next question is, How to increase its use?

Few people, either gas consumers or prospective gas consumers (and we have been taught in Denver that this phrase covers all establishments on our lines of main), or even managers, have any conception of the infinite number of fuel gas appliances on the market to-day, and the great variety of purposes to which they are adapted.

The proposition narrows down, or perhaps it would be more accurate to say, broadens out to this: Wherever heat is required gas is the cleanest, quickest, most convenient and reliable fuel. And, when cartage and storage room for solid fuel and ashes, the difference in floor space required for the appliance, the time saved to the workmen when using gas, the quality of work done, the lower insurance rates—when these items are considered in the cost, gas will be found the cheapest fuel for a majority of purposes. That it would be easier to list those purposes for which gas appliances have not been made and successfully used, than to list those for which they have been, the writer knows from experience.

These facts were not generally known to our fellow townsmen. How best to inform them was the paramount question. It was then that the idea of a catalogue illustrating these appliances and pointing out their manifold uses was born.

The field was so large that it was not deemed expedient to cover it all—the work was confined, therefore, to industrial appliances; but even to represent all of these would have required a volume of enormous proportions. It was decided to represent types of appliances only; to show, if possible, an appliance for every known use to which gas can be put for industrial purposes, and to refer possible consumers to the gas company for more detailed information regarding the various makes.

The compilation was begun by addressing a circular letter to all gas companies in this country and Canada, requesting information regarding the various appliances in use. The replies to this letter were followed up by correspondence with the manufacturers. Gradually a vast assortment of information, cuts, photographs, drawings, etc., was accumulated. This accumulation was sorted and resorted, arranged and rearranged, and, finally, when it became apparent that the work could be continued indefinitely, and that it would be better to issue a revised edition at some future time than to hold this one up too long, it was sent to press.

To comment on all these appliances would be to rewrite the catalogue. It might not be amiss to say, however, that the larger mangles used in laundries for ironing heavy work, such as sheets, tablecloths, etc., have never been designed for gas heat. A number of small mangles are heated by gas, but the large ones, with 4, 6 and 8 rolls, have always been heated by steam. It is claimed by the manufacturers that the large amount of heat required to evaporate the immense quantity of water held in suspension by this class of work as it comes from the extractor would make the cost of operation with gas excessive.

But the axiom, "Where heat is required, gas is the best fuel," was impressed upon the representative of one of the large manufacturers, until he promised to take the matter up with his house. Their mangle is so constructed that it could be very readily adapted to gas. This gentleman, from a well-known house, gave the writer to understand that if they had a call for such a mangle there was little doubt they could supply it.

If this could be made a success, think of the enormous field to be opened up. Everyone in cities sleeps between sheets, and most everyone eats over tablecloth. Is this not an incentive to some hustler to induce a laundry to put in such an appliance, just to set the ball rolling?

It is the intention of the management of the Denver Gas and Electric Company to issue a revised edition of this catalogue, inserting those appliances that have been overlooked or that have been perfected since the first edition was printed. For this reason it is earnestly requested that any information regarding new appliances be sent in. So many requests for copies of the catalogue have been received that it has been impossible to supply them all on account of the limited edition. The cost per copy of this first edition put it beyond the reach of most gas companies as an advertising medium. Electrotype plates were made of each page, so that the cost of a second edition would be materially less.

If sufficient subscribers to a second edition could be secured to take say 2,000 copies, the cost per copy would be reduced to less than 50 cents, instead of nearly $2.50, as it now is. The companies subscribing for 100 or more copies could have their names printed on the cover, title page, etc., thus making the catalogue a valuable advertisement to place in the hands of the manufacturers of their cities.

Copies composed of loose leaves, printed on one side of the page only, and placed in envelopes, have been provided for the members of this Association. It has been suggested that you would derive benefit from these loose leaves by hanging them upon the walls of your showrooms, so that your consumers may see, become interested, and perhaps install some of the appliances.

The writer would like to say in closing that this paper should have been entitled "Industrial Fuel Gas Appliance Catalogue," but our Honorable Secretary simply published the title and notified the writer that he was expected to write a "short topic," and he has done his best.

Discussion.

The President—The catalogues referred to are in the room and are at your disposal. This is a very excellent contribution, referring both to the paper and to the catalogues. It is the most exhaustive catalogue in the nature of gas appliances that has yet been produced. Are there any questions or comments to be made?

Mr. Stone—We have had very good success on these lines. The chief difficulty we have to overcome is the selection of an appliance peculiarly adapted to the work. The high price of gas makes it abso-

lutely necessary to get appliances adapted to the kind of work it is desired to do. There does not seem to be any advertising done by the makers of the different styles of industrial fuel gas appliances. Information in that regard seems to be lacking. Until such time as I secured a copy of this catalogue, issued by the Denver Gas Company, I was altogether at sea with regard to where to buy the various kinds of appliances we needed to fulfill particular conditions. While Mr. Doty was reading this paper, I was wondering whether some scheme could be evolved by which information of this kind would be open to the members of this Association so that when we had a place where we could put a particular kind of appliance we could write to someone and find out who made a machine of that type or who made appliances of that type and then take up the matter with them. The difficulty appears for the members of the Association to ascertain the makers of these machines, and to induce the manufacturers of the different appliances to get the cost of the appliance down to what the consumer considers a reasonable limit. A man does not feel like investing $75 or $150 in a forge. It looks a pretty big price. It may be worth that amount to him, but the gas man has considerable trouble in convincing him of that fact. If we could get a list of manufacturers of these machines, it would be a great help.

The President—Mr. McDonald, have you anything to say on this subject?

Mr. Donald McDonald, Louisville, Ky.—About all I have to say is that one-half of the machines on the market are failures. In recommending these machines to consumers, if we were in position to give them absolutely correct advice as to which is the best, it would be of great help. A good many of these machines, while they can be made a success, have points that have to be watched without which they will be failures. I was thinking we might have a plan by which some of our own representatives, not representing entirely the manufacturer, would be placed in a position where he could furnish us the desired information, so that if we desired to install a particular machine, this representative of ours could caution us to have the consumer look after this, that or the other particular point, so that every means possible would be taken to insure the successful operation of the machine. A salesman will recommend a machine to do anything on earth. On his recommendation you advise the consumer to buy it. He buys it and puts it in. The first thing you know he comes to you and asks you why you recommended it, claiming that it is not as recommended. In other words, if we were in a position to furnish each other the knowledge which we obtain from experience in the sale of these appliances, it would be very valuable indeed.

Mr. Butterworth—I think the catalogue contains the name and address of a manufacturer of each of these appliances, and each one of these manufacturers could be written to, and I should think they would be very glad to give the names of the gas companies ussng the particular apparatus and in that way Mr. McDonald could easily obtain a list of the gas companies using the particular apparatus about which he desired information.

Mr. McDonald—I want to congratulate the gentleman who got this catalogue up. It is the most complete that I have seen, and it is certainly a most valuable piece of literature to every gas man in the country. It is something that I have wanted hundreds of times, and I think the members of the gas fraternity are to be congratulated upon having a member so progressive and so industrious as to be able to furnish a catalogue as complete as the one submitted in connection with this paper.

On motion a vote of thanks was extended to Mr. Andrews for his very valuable paper.

Some Interesting Communications.

The President—We have here a letter from Mr. F. H. Shelton, President of the Western Gas Association and Chairman of its Library and Index Committee. He incloses a sample index issued under the auspices of the Western Gas Association, comprising the placing of for easy finding of past and current gas literature, which copy is intended for the use of our Association. If any members of the Association desire to obtain a copy of this index they can do so by communicating with Mr. Shelton. There is a certain plan established for the payment of these indices, rated on the output of the gas company which may desire one of them. His letter to the Association in relation to this matter is as follows:

Philadelphia, Pa., Feb. 8th, 1904.

To the members of the Ohio Gas Light Association: Gentlemen—You are probably familiar with the fact that the Western Gas Association in the past year has completed a Card Index of the most important gas reference articles for the convenience and use, not alone of its members, but all those in the gas business who may desire it. A sample of this index has been forwarded to your Secretary, and is in the room at this meeting for examination. This index covers some 1,300 references to all the articles in the New England, the American and the Western Gas Associations, from the beginning 25 years or more ago, and to all the articles in the American Gas Light Journal on current topics for the past 5 years, and to all the books published on gas matters. With it anyone can immediately find practically what has been written of importance on almost any gas subject whatever. This matter is called to your attention, as it is felt that some of our members may be glad to become more familiar with what this index is and to procure copies of it.

The price established by the Western Association is on a sliding scale, based on the output of the companies who may purchase a set, and will be found attached to the sample set that the Secretary has.

Any orders should be sent to me, 1004 Pennsylvania Building, 15th and Chestnut Streets, Philadelphia. Yours truly, F. H. Shelton,
Chairman Library and Index Committee, Western Gas Association.

On motion of Mr. Stone a hearty vote of thanks was extended to Mr. Shelton for his courtesy.

The President—We also have a letter from Mr. Shelton calling attention to the exhibit of the gas industry at the World's Fair at St. Louis. This letter is as follows:

Philadelphia, Pa., Feb. 8th, 1904.

To the President and Members of the Ohio Gas Light Association: Gentlemen—You are no doubt familiar with the fact that the Western Gas Association is arranging for an exhibit of the gas industry at the World's Fair in St. Louis, that opens in May. The Western Gas Association herewith extends to the officers, and to every member of your Association, a hearty invitation to visit it (this gas display) and the Exposition, and to accept the hospitality ihat it is promising itself the pleasure of extending to every gas man who may this summer come within its gates.

The regular meeting of the Western Association will be held this year, not in May, as usual, but in the middle of June. You are cordially invited to visit St. Louis in that week, if possible, and participate in our Convention, in addition to visiting the Exposition and the gas display.

The exhibit that the Western Association is arranging, while including naturally standard things with which we are familiar, will nevertheless have a number of new features that will make it of special interest and particularly worth while to visit. We shall have, for instance, an operating model of the new centrifugal, coal-projecting machine for charging retorts in an entirely new, ingenious and efficient manner; samples of incandescent mantle burners of inverted or pendant form, something not heretofore on the market in this country; a showing of station meters with an entirely new style of index, superior to that we are accustomed to; samples of concrete purifier construction and apparatus illustrating the handling of gas at high pressure, and numerous other novelties and innovations. The Western Association has worked hard to arrange an exhibit that it believes will be creditable, not alone to it, but to the whole industry to which we are all loyal, and it believes it has succeeded.

It asks you to come and judge for yourselves; visit with us in St. Louis, in the middle of June next, and accept the hospitality of the Western Association there. Yours truly, F. H. Shelton, President.

The President—We also have a letter from Mr. C. J. R. Humphreys, Chairman of the Gas Congress Committee. As we all understand, this Gas Congress is to be a general gathering of all those interested in the gas profession. It is expected that a number of engineers from abroad will be present, and it will undoubtedly be a very noteworthy event in the gas industry. All of the Associations in the country are joining in this matter. Each Association has appointed a committee to take action in the premises, and it is requested, or suggested rather, in these communications that this Association appoint a committee of three to act in conjunction with the other committees. It is also suggested that there may be some expenses attendant upon the Gas Congress and it has been thought that the most feasible and desirable method of obtaining funds would be an appropriation by the different Gas Associations instead of making any call if possible upon the members of the Associations themselves. The letter of Mr. Humphreys is dated, Lawrence, Mass., March 11, 1904, and is as follows:

"Inclosed please find copy of a circular note which I have sent to Mr. T. C. Jones, Secretary of the Ohio Association, as well as to the

Secretaries of all the other Gas Associations throughout the country. I trust we may have the active co-operation of your Association in our efforts to make a success of this, the first Gas Congress to be held in this country. We are particularly desirous that this should be a Congress of Gas Associations, and that every such body throughout the country will give us the benefit of their moral support and co-operate with us heartily, in order that the Gas Congress of 1904 may compare favorably with the various other Congresses which are to be held this year in St. Louis.

I am sure we all feel a personal pride in our profession and that every Gas Association in the country will be more than glad to contribute to the success of the meeting, and that the members of the gas fraternity may feel that in contributing to the success of the Congress they will be advancing the interest of the profession they represent.

Yours very truly, C. J. R. HUMPHREYS,
Chairman Gas Congress Committee.

The President—The circular letter referred to in the letter just read is as follows:

NEW YORK, Feb. 17th, 1904.

JOHN D. MCILHENNY, President, Ohio Gas Light Association—Dear Sir: The American Gas Light Association cordially invites the Ohio Gas Light Association to participate in a Gas Congress, to be held at St. Louis, June 15th, 16th and 17th, a time when it is thought the Louisiana Purchase Exposition will be at its most interesting stage. Never before in the history of the gas industry has an effort been made to hold a Congress of all the Gas Associations of America, and it is felt by the Committee of the American Gas Light Association having the matter in charge that the Louisiana Purchase Exposition offers a most excellent opportunity for the Gas Associations thus to meet together, that the gas men from the North, the South, the East and the West may discuss subjects of mutual interest, each contributing from his information and experience to the common storehouse of knowledge, and each in his turn enriched by drawing upon that same fund of information, made up by the experience of men living thousands of miles apart, but all interested in a common cause. Add to this thought the attractions offered by the Exposition, and surely the occasion would seem auspicious for the first Gas Congress of the Gas Associations of America.

There are scattered throughout this country 11 Gas Associations with a membership of about 2,000, and it is confidently thought that if these Associations join with the American Gas Light Association in such a gathering it could not but be a pleasurable occasion, it could not but be a profitable occasion, and it could not but redound to the advantage of those pecuniarly interested in the gas industry.

The nucleus of a good attendance is assured by the fact that the Western Gas Association has arranged to hold its annual meeting on the day before the opening of the Congress, to have only a one day session and then adjourn to meet with the Congress.

It is intended that the appropriate officers of the participating Associations should be Vice-Presidents of the Congress. It is intended to invite gas engineers from abroad to participate in the Congress.

As the time for the preparation of the various details of the Congress is short, we would urge you to appoint a committee with power to act in this matter. Yours very truly, C. J. R. HUMPHREYS,
Chairman Gas Congress Committee.

The President called for the action desired by the Association respecting the communications.

On motion of Mr. Doherty, seconded by Mr. Butterworth, a committee of three was ordered appointed to represent the Ohio Gas Light Association at the Gas Congress. The motion also set aside $100 towards defraying the expenses of the Congress.

The President-elect, Mr. F. W. Stone, complying with the above motion, subsequently named the following committee to represent the Ohio Gas Light Association at the Gas Congress: Henry L. Doherty, John D. McIlhenny and T. C. Jones.

The Secretary read the following

ADDITIONAL REPORT FROM THE EXECUTIVE COMMITTEE.

CLEVELAND, O., March 17, 1904.

To the Members of the Ohio Gas Light Association—Gentlemen: The Executive Committee begs leave to offer the following recommendation, that Mr. B. E. Chollar be elected to Honorary membership.

Respectfully submitted for the Executive Committee,
T. C. JONES, Secretary.

MR. CHOLLAR ELECTED TO HONORARY MEMBERSHIP.

The President—What action will be taken upon the report of the Executive Committee?

On motion of Mr. Butterworth the report was adopted by rising vote, which carried with it the recommendation of the committee that Mr. Chollar be elected to honorary membership.

The Secretary notified Mr. Chollar of the action of the Association, and later on received from him the following reply:

2840 TROOST AVE., KANSAS CITY, MO., March 29, 1904.

MR. T. C. JONES, Delaware, O.: After more than a week I find myself still unable to give proper expression to the feelings of surprise and gratitude with which I read your letter. I was quite satisfied to have my name on the roll as an active member. I do not think my activity was sufficiently vigorous to merit higher honor; but as the Association think differently, I hope and trust that no action of mine may ever give them cause to regret their action. Yours truly, B. E. CHOLLAR.

REPORT OF COMMITTEE ON STANDARD METHOD OF TESTING FUEL GAS APPLIANCES.

The President—The next order of business will be the report of the Committee on Standard Methods of Testing Fuel Gas Appliances. Mr. Doherty, I believe, is Chairman of that Committee.

Mr. Doherty—Mr. Chairman, I will just read a portion of this report and abstract a portion of it, with the idea of getting suggestions and perhaps a discussion that will be of benefit in the future work of your committee.

Mr. Doherty read as follows:

Your committee wishes to recommend to the Association that its report of last year be amended by substituting a new report, which we think should be in the form of a detailed explanation and should be published in pamphlet form and supplied to all gas companies and appliance manufacturers. Considerable interest has been evidenced in the work of this committee, and, on the other hand, many appliance manufacturers and gas companies have seemed to oppose it. Others seem to think that it is the wish of this committee that economy of operation should be considered of paramount importance to all other desired features in gas appliances. This is not the position of your committee, for we recognize that economy alone does not determine the value of an appliance. The degree of satisfaction of results is of prime importance, and satisfactory results cannot in any way be compensated for by economy. We presume, however, that no gas man will disregard in the future, or has disregarded in the past, the consideration of satisfactory results secured from appliances, their artistic appearance, workmanship, ease of repairs, ease of cleaning and durability.

Many factors which go to make up the most desirable range from a commercial standpoint are matters of opinion to be determined by visual inspection. Economy is not so easily determined, and some of the foremost appliance manufacturers confess that they do not know the exact economy of the gas appliances they manufacture, the extent of the losses, or the division of these losses. High economy should not in any way interfere with other desirable features of gas appliances, and as a rule should contribute to rather than detract from these desirable features. Your committee assumes that every manager believes it to be to his company's interest to supply the appliance which shows the highest efficiency consistent with other desirable features.

For the benefit of those who are not entirely familiar with this work, it may be well to state that, until our last convention, no attempt has ever been made to establish standard methods for testing fuel gas appliances. Miscellaneous methods were in use which could only result in conclusions which failed to agree. The purpose of this work is to reduce the testing of fuel gas appliances to a condition where the same conclusions will be reached no matter where, when, or under what conditions the investigation is made. It is also the purpose of this work to determine what portion of available heat in the gas is made to do useful work and what portion is lost. Further, it is the intention of this work that these losses shall be subdivided into their determining causes to enable the designer and the purchaser to curtail these losses, or if possible to eliminate them. The simplest means possible are recommended for this work, but your committee realizes that we are probably far from the best solution of these various problems. We are simply doing what we can and asking for all the help which can be secured.

The field for gas fuel is practically unlimited, and the extent to which gas is used depends upon the aggressiveness of the management of the gas companies, the price of gas, and the efficiency and durability of the appliances available. It is possible to materially increase the efficiency of all gas burning appliances, and your committee believes that it is possible to open up more extensive fields for the use of additional gas in this way than could be secured by a reduction of 25 per cent. in the average selling prices of gas.

The apparatus for conducting these tests is inexpensive, but some time and expense must be incurred by each gas company which wishes to be thoroughly informed regarding the desirability and availability of various gas appliances. This expense, however, is insignificant compared with the great benefits which can be secured by this knowledge. Compare, if you will, the expense of research work on this problem with a material reduction in the price you are charging for gas, and the insignificance of this expense will be made apparent.

With this explanation we will take up the detailed methods of doing this work, and it will be the aim of your committee to outline the methods it recommends in a way intended to be intelligible to the man who does not enjoy a technical education and in a way which will enable this work to be taken up by an ordinary workman without demanding more than minimum attention from the manager or engineer wishing to adopt these standard methods.

HENRY L. DOHERTY,
F. W. STONE,
JOHN FRANKLIN, } Committee.

Mr. Doherty, continuing, said: I will make a few comments on our work and touch upon some matters which may be of considerable interest to you. Our first heading will be "Gas Supply," under which we call attention to the necessity of having uniform pressure. We also comment upon the effect of pressure and try to counteract an error, which we believe is prevalent among most gas men, to the effect that high pressure adds materially to the efficiency of a Bunsen burner. This is only so when the checking is done entirely at the orifice of the burner and the full potential of the gas is delivered in the form of the kinetic energy of velocity; but where you are using a Bunsen burner with a fixed orifice on different rates of consumption, what you do is to change the differential pressure on each side of the orifice until only the amount of gas will pass which you wish to use. The choking effect of the pressure is accomplished at the stopcock, right behind the orifice, and the burner works just the same whether that congestion occurred at the works or at the stopcock. The one essential thing in any gas supply is to have gas of a uniform quality and gas of a uniform pressure.

As to the water supply, we believe it possible in all cases to use the water from the street mains, but recommend the use of an automatic, overhead tank, so arranged that you will have a constant head that gives you a constant supply of water, which as a rule is used to absorb the heat and measure the quantity which has been yielded to do useful work.

The scope of this report is only to the extent of the usual appliances. Industrial fuel gas appliances, such as braziers, forges and tempering furnaces, are left for consideration in some future report.

For sake of convenience the following classification is made:

In water heaters we ask for the adoption of the name for the circulating water heater of "Circulating Water Heater." It is generally called an independent heater.

We want a classification of instantaneous heaters as "Instantaneous Heaters," and distinguish between the two types of instantaneous heaters by the terms of "direct" and "indirect;" the direct being that type where the products of combustion come in direct contact with the water being heated, the indirect being that type of water heater where the heat is transmitted through a tube, or some other arrangement that will enable the heater to be operated under a pressure of water and hot water delivered to some other location. To name types, the Douglas Heater would be a direct instantaneous heater, and the Monarch Heater would be an indirect instantaneous heater.

The range we have divided into "top burners," the "oven" and the "broiler." To the top burners we have given the usual names. First, the regular burner, then the simmering burner and the giant burner. We hope to have these names used, especially in distinguishing as to water heaters, so that when one gas man talks to another both will know what each is talking about.

The circulating water heater has probably reached the highest state of development of any particular gas appliance with the exception of the direct instantaneous. There has been remarkable progress made in the circulating water heater in the last few years, and it is very much better than it was then, or perhaps, to be more exact, it is "less worse" now than it was a short time ago.

Here is a chart (indicating) of tests on circulating water heaters. I do not know how many of you can see it, but you can get pretty nearly anything you are looking for in the way of efficiency. Of some 14 heaters that are now on the market, the greatest variation in efficiency is 29 per cent. as a minimum and 81.9 per cent. as a maximum. You can get anything in between there. Two heaters are on this table that are made by the same manufacturers. Their older heater has much the better efficiency, but they are pushing the newer heater, believing that has the higher efficiency.

Mr. Knight—Mr. Doherty, will you not explain what you mean by efficiency?

Mr. Doherty—By efficiency we mean the amount of heat made to do useful work, in relation to the amount of heat supplied in the gas. If you supply 100 B.T.U. in the gas and 60 per cent. of that is put into the water, then you have a heater of 60 per cent. efficiency.

We also call attention to the fact that if the heating value of gas cannot be determined by analysis, or measurement by a calorimeter, that it is safe to take some arbitrary figure and assume the gas is of that value and you will get comparative results. You will not get actual results, but you will get comparative results, and that is what you are most anxious to have.

The efficiency of gas ranges is nearly the same for all makes There is not a great difference there. If one were to judge of the comparative results of gas ranges the assumption would be that a gas range is a perfect machine in its present shape. It, however, is not a perfect machine. There is no portion of a gas range that works to 60 per cent. efficiency.

The only change between this report and our last report is that we have used a comparative method this time for measuring the work of theoven, and we have changed the appliances used to measure the efficiency of the broiler. Otherwise the report is the same as it was last year. But it was our desire to draw it up in detail shape and print it in pamphlet form and scatter it broadcast, and to make it so plain that anyone could follow it and do the work.

We have also changed the appliance slightly for measuring the efficiency of top burners, because we find the appliance recommended by the committee last year had too much thermal capacity, so we have put a displacer in the pan containing the water, reducing the bulk of water to about 11 per cent. of what it was formerly. We have also given a new method for distinguishing between necessary and unnecessary flue loss, by showing how the relation between total quantity of flue loss and service gas can be determined by an analysis of the flue gas after a previous determination of how much CO would be produced from the burning of 1 cubic foot of service gas. We give instructions for the use of flue gas analysis apparatus in a more detailed form than last year.

We ask for the adoption of the report as read, with the privilege of making the changes in detail, and then we ask for permission to publish, with the expectation that it will be done during the summer, after having made some further tests. We want to publish it in pamphlet form and distribute it among all appliance manufacturers and all gas companies and we move that we be authorized to do so.

Mr. Butterworth seconded the motion and it was adopted.

Mr. Donald McDonald, Louisville, Ky.—It is hardly fair to criticizs the report of a committee before it is read in detail. I confess I was not able to follow it as it was read by the Chairman. As it is going to be amended some time before it is published, I want to ask if in testing the top burners of stoves, for instance, consideration has been taken of the different rates at which the gas is burned?

Mr. Doherty—We have taken that into consideration.

Mr. McDonald—I find I can evaporate a given quantity of water with 2 feet of gas, or I could evaporate the same quantity of water with 4 feet of gas, using exactly the same burner and the same gas, the only difference being how high I turned the gas on.

Mr. Stone—One statement made by Mr. Doherty is that no gas range had over 60 per cent. of efficiency. As I understand it that was not in the report, but was merely a personal opinion of Mr. Doherty in regard to that one matter.

Mr. Doherty—It was merely a comment, Mr. President, and was not a part of the report. I would like to hear some discussion on this subject, because I think it is important. Your committee admit that they are floundering in the dark to a certain extent. It might be of advantage to find out who are using the methods recommended by the committee last year and what results they have secured.

The President—Have any of the members present used the methods for testing the appliances recommended by the committee last year.

Mr. McDonald—Mr. President, I will risk confessing myself to be an ignoramus by saying that the method recommended by the committee last year was so infernally complicated that I could not carry it out. The real question of the efficiency of a gas range is, how quickly it will cook biscuits, and how much gas it will take per burner. The same identical range in the hands of different cooks will show a difference in efficiency of 300 per cent. The question is, how skillfully they use it, how clean they keep their burners, how high they turn them,

and how quickly they turn them out after they have finished. Now, I do not mean to say that we cannot get something like an idea of whether a range or water heater is constructed on scientific principles. I believe a water heater that is constructed on scientific principles would show a much greater efficiency than one that was not so constructed. A good one is worth two or three times as much as a bad one. But as to ranges, the question of how easy of repair and how easily they are cleaned would, in my opinion, go away beyond any question of theoretical efficiency as to per cent. of gas used.

Mr. E. G. Van Wie—I would like to ask Mr. Doherty if in testing these various appliances the gas consumption per hour is adjusted? For instance, in testing a water heater would you have the same rate per hour for each heater?

Mr. Doherty—Yes; both would be burned at the same rate and under exactly the same conditions to determine their relative efficiency.

Mr. Van Wie—You reduce the inlet so that they do burn the same?

Mr. Doherty—We would change the stopcock. The curve I held up before the meeting showed the efficiency at each point of consumption; starting with 10 feet and progressing 5 feet at a time to the maximum consumption of the heater.

The President—Any further comments on the report of the committee?

Mr. Knight—I would like to ask if the committee do not consider as also important sanitary condition.

Mr. Doherty—Certainly. If this work were undertaken—and it is in the province of the Association to say whether it shall be taken or not—it is presumed that the methods as laid down by your committee on standard methods for testing fuel gas appliances would be adopted and rigidly adhered to. The changes that are made in this year's report would give the same results. The changes we have made are intended to furnish further instructions to make our former instructions more explicit and to try and simplify the tests. Mr. McDonald takes a position which is unconsciously one calculated to retard progress. He points out the inability of the committee to procure methods of testing and to give instructions that are simple, or, at least they seem to him, complicated. Now, perhaps, they are complicated, and perhaps they could be greatly simplified, but we have to have some standard method of testing these appliances if we are going to pay any attention at all to efficiency, and we must take the best we can evolve at this time. If we could get the hearty support of the Association in trying to simplify them, we would probably be able to produce a report which would be more generally satisfactory. We will be only too glad to listen to any suggestions that any of the members of the Association will give to us. Now, Mr. McDonald also voices the sentiment of 50 or 60 per cent. of the gas fraternity and about 90 per cent. of the manufacturing fraternity, when he says that efficiency is a matter of relatively small importance compared with other things. I think that position is taken because the efficiency of the present gas appliance is greatly overestimated, and I think also the position of the committee is not thoroughly understood. We are not advocating a disregard of other features. We are, in fact, hoping that more attention will be paid to the other features from now on than has been paid in the past; but if we are to take the position that efficiency is of relatively small importance and not determine what the efficiency is, it means that we will neglect this important factor entirely, and will not care whether we get 29 per cent. or 82 per cent. efficiency out of a water heater. Now if there is nothing about a highly efficient appliance as a rule which will jeopardize or lessen any of the desirable features of a gas appliance, as it is now constructed, then why not ascertain those appliances which are the most efficient, and, other things being equal, why not recommend their use? A high degree of efficiency will also permit desirable features in many appliances to be increased. It is easily possible for each manager to determine these points. Mr. McDonald brings up the question of durability, ease of repair, and matters of that sort. It is not an easy matter to determine efficiency. The curve which I showed you on water heaters shows results varying all the way from 29 to 82 per cent. Now, every manufacturer submitting a heater maintains that his heater is the best, and most of them, I think, believe it is the best. One manufacturer, for instance, is going wild over a certain heater which he believes will revolutionize the world; its efficiency is about 55 or 58 per cent. He has a pet theory, and according to him all the books on physics are wrong about the burning of gas, and he has discovered the only proper solution of it. I would say in conclusion, Mr. President, that I would like to see the matter placed in the hands of men whose work would be of such character and who would be so situated that the results they obtained could not be questioned. We, therefore, feel that if the Association takes up this work, it should be carried on in the laboratories in the Ohio State University, or if the work cannot be carried on there it should be carried on at some of the other large Universities. Purdue University, Lafayette, Ind., is a very progressive institution, and would be glad to undertake this work, I think, if the Ohio State University does not care to do it. If the Ohio State University and the Purdue University do not care to do it, I think I can assure the Assuciation that the Wisconsin University would take it up.

Mr. Donald McDonald, Louisville, Ky.—I do not wish to be a brake on the wheels of progress at all. I would suggest if this committee is appointed to determine efficiency, and if college students can do it, that the committee also be instructed to report on each appliance examined as to its durability. For instance, on durability let them report that it stands 6 out of a possible 10 points; as to ease of repair, that it stands 8 out of a possible 10; as to convenience in cooking, which is one of the most important factors, that it stands 5, 6, 7, 8 or 9 out of a possible 10 points. In other words, I do not care a "baldee" what the most efficient stove is. I want the one that will give the best satisfaction to my customers, and efficiency is only one of the elements that enter into it. It is an important point, but stoves which I have examined and become very enthusiastic about, after putting them into use and using them for a short time, some little screw would give out, or some of the minor parts prove defective, and the whole thing would be a failure. There are practical points of this kind that enter into it which, from the standpoint of satisfaction to the consumer, are worth a great deal more than any theoretical question to be determined by a calorimeter or a university student. So that if we appoint a committee at all, let them cover the practical features of this question as well as the theoretical features, and when they report that a particular stove has an efficiency of 70 or 80 per cent. let them also report on other points that only experience can determine. In other words, seeking guidance, let us get true guidance.

Mr. Stone—The only objection I see to the scheme detailed by Mr. McDonald is that the question of efficiency in an appliance is a question of fact that can be definitely determined; the question of durability or convenience or practicability is a mere question of opinion, about which possibly no two persons could agree.

Mr. Butterworth—I will say it is not merely a matter of opinion, but one of experience and long continued trial to determine, for instance, the question of durability, which this proposed committee of experts would have no means of ascertaining or investigating.

Mr. Doherty—Agreeing heartily with the last two speakers, I only want to correct an impression that Mr. McDonald's remarks may have left. These tests could be carried on by university students aided by help from others better qualified to do the work. If the work were carried on at the Ohio State University, I would like to see it undertaken under the direction of Prof. McGruder or Prof. McCracken, or some other expert of recognized ability. In that institution you will find several men of recognized ability who would really conduct the work themselves, simply using the students as assistants. I want to reiterate what Mr. Stone has said, that the question of durability, and a great many matters of that sort, are absolutely matters of opinion, and were they not matters of opinion, every gas man in the country would be buying the same make of range; but as they are matters of opinion purely, therefore, it would not be a safe plan to undertake more work than such a committee can properly do. Mr. McDonald's position now is, that if one point is to be determined for him he wants all points determined. It seems to me we would be in a better position to determine one point at a time, and determine that well before attempting to have the same men, who may only have facilities and opportunities for observation to determine one point, to attempt to determine all of the points referred to. Now, I know absolutely that some of these matters are matters of opinion, pure and simple. Mr. McDonald and I, for instance, could dispute all night over certain features, and in the morning we would be of the "same opinion still."

Mr. McDonald—That is so, Mr. Doherty. (Laughter.)

Mr. Doherty—There is no way that certain points can be decided. If Mr. McDonald says a certain stove will last 10 years, and I maintain that it will only last 7 years, we cannot determine the actual life of the stove during our discussion. But we can determine the efficiency of a stove, and there is no chance at all for difference of opinion, after it has once been properly tested.

Mr. McDonald— I hate to be put in the position of the twelfth stubborn man on the jury, but it seems to me that if a certain make of stove has been used in my town, and I find the oven burns out so I could not fix it, and I have to throw that stove away, before another trusting and confiding individnal is induced to install the same stove, a committee of experts ought to be able to determine that fact, notwithstanding the stove may show an efficiency of 75 per cent. I am not

saying that the determination of efficiency is not always an important matter, but if that is all the committee want to undertake let them undertake it. After they have determined the efficiency we can appoint another committee to determine the practical points. (Applause.)

Mr. Doherty—That is all right.

Mr. Butterworth—Mr. McDonald has anticipated a motion that I was going to make to appoint another committee to take up the practical points suggested other than those of efficiencies. If there is nothing before the house, I move that the Chairman appoint a committee of three from the members of this Association to ascertain the relative practical merits of the different forms of domestic gas appliances.

Mr. McDonald—I would suggest that Mr. Butterworth defer that motion until we get the report of this committee on standard methods for testing fuel gas appliances.

The President—As Mr. Butterworth's motion is not seconded, it is not before the house.

On motion a rising vote of thanks was passed to the committee for the work performed and the report submitted.

Mr. Doherty—I move that the Association authorize the Secretary to make arrangements to have the various domestic fuel gas appliances tested, according to the recommendations of your Committee on Standard Methods, at the Ohio State University, or some other university, and report the efficiency secured to the members of this Association, and that the Association authorize the Secretary to expend the necessary amount of money, limiting the amount to be expended to the sum of $100. [Adopted.]

Mr. Doherty—I would like to make a motion for an absent member. This Revision Committee, which was provided for yesterday, is anxious to secure all of the gas literature it can, and it has been called to the attention of a member of the Association interested in that Committee that Mr. Forstall, as Secretary of the American Gas Light Association, has an extensive card index. I, therefore, move that the Association respectfully requests Mr. Forstall to allow our Secretary, or the Chairman of the Revision Committee, to make a copy of his index, at our expense, for the use of this Revision Committee, and that the Secretary be authorized to communicate with Mr. Forstall, advising him of the request of the Ohio Association to make a copy of his card index. [Adopted.]

At the invitation of the President, the

REPORT OF THE COMMITTEE ON FINAL RESOLUTIONS

was read by Chairman Eugene Printz, as follows:

Members of the Ohio Gas Light Association: The Committee on Final Resolutions begs leave to offer the following:

Whereas, That members of the Association feel that the meeting has been a most pleasant and profitable one, owing to the exertions of its President, Secretary and Committee of Arrangements, it is but fitting that the appreciation of the members present be shown by

Resolving that the thanks of the Association be tendered them for their successful efforts.

Resolved, That the thanks of the Association be tendered the American Stove Company, the Cleveland Gas Light and Coke Company, the Peoples Gas Light Company, the Welsbach Company, the Gas Machinery Company, the United States Cast Iron Pipe and Foundry Company and the Hollenden Hotel for their entertainment of our members and guests.

Resolved, That the Secretary forward to the aforesaid copies of these resolutions.

EUGENE PRINTZ,
G. H. TAYLER,
A. J. STACEY,
} Committee.

On motion the report was accepted and ordered spread upon the minutes of the Association.

The President called for the

REPORT OF THE COMMITTEE ON NOMINATIONS,

which was read by its Chairman, Mr. M. E. Malone, as follows:

On behalf of the Association your Committee on Nomination of Officers for the ensuing year recommend the following:

For President—F. W. Stone, Ashtabula, O.

For Vice-President—Donald McDonald, Louisville, Ky.

For Secretary and Treasurer—T. C. Jones, Delaware, O.

For the Members of Executive Committee—C. R. Faben, Jr., Toledo, O.; Paul Doty, Denver, Col.; W. H. Barthold, Grand Rapids, Mich.

For Editor Question Box—H. L. Doherty, N. Y.

For Editor Progress Department—Irvin Butterworth, Detroit, Mich.

For Editor Novelty Advertising and New Business Methods Department—B. W. Perkins, South Bend, Ind.

For Editor Wrinkle Department—E. E. Eysenbach, St. Paul, Minn.

For Editor Information Bureau—H. L. Olds, Lincoln, Ills.

For Committee on Standard Sizes for Coke—C. W. Andrews, Duluth, Minn.

For Committee on Uniform System of Mapping Street Mains—W. H. Barthold, Grand Rapids, Mich.

For Committee on Standard Methods of Testing Fuel Gas Appliances—Henry L. Doherty, N. Y.; F. W. Stone, Ashtabula, O.; John Franklin, Cincinnati, O.

For Committee on High Pressure Distribution—H. A. Carpenter, Pittsburg, Pa.; J.D. Shattuck, Darby, Pa.; J. O. Johnston, Columbus, O.

For Committee on Revision—H. B. Harrop, Chairman, Milwaukee, Wis.

The Report of the Committee was unanimously adopted, which motion carried with it the election to office of the gentlemen named.

CLOSING THE HIGH COURT.

The President—I will appoint Mr. Knight a committee of one to escort Mr. F. W. Stone, our newly-elected President, to the Chair.

Mr. Stone—Fellow Members, Gentlemen of the Ohio Gas Light Association: It gives me great pleasure to have been elected your President; more pleasure than possibly anyone of you can appeciate, because I can remember, not more than 18 or 19 years ago, I was getting blisters on my feet from running back to the shop for nipples to fix services with, and blisters on my hands trying to work a pair of pipe tongs. I never expected at that time to reach any such position as this. I realize that with such an office comes also a sense of responsibility. I have a feeling that you have elected a very small man to a very responsible position—a man who is not capable of filling it in the excellent way it has been filled in the past. I could not fill it did I not feel that there is a spirit of fraternity in the Ohio Gas Light Association which makes each and every member willing to put his shoulder to the wheel and help in the work we have to do. All of you I am sure will be willing to give me your hearty support. The success of the Association for the ensuing year will not depend upon the efforts of your President so much as upon the effort that each member will put forth in securing a successful meeting next year. I can say with a great deal of pleasure that I have never asked the assistance, advice, the help or the counsel of any member of this Association who has not been willing to tell me all I wanted to know. I feel that there is more brotherly interest and co-operation in the gas fraternity than in any other line of business. I want you all to feel that way now, and I ask during the coming year your earnest support in any work that the Association may undertake. I assure you I will do the best I possibly can as your President, but I have a feeling that the part I will be able to play in the matter will be comparatively small and that the success in the work of the Association will rest in the hands of its members. I thank you. (Applause.)

The President—We will ask Mr. Doherty to escort Mr. Donald McDonald to the floor—our newly elected Vice-President.

Mr. McDonald—Gentlemen, I am on the floor already, and think that is where I belong. Without experiencing that sort of diffidence which I either have or ought to have, I will say that I do not live in Ohio and that I am forbidden by law from selling gas for light, so I accept this offer with the understanding that this is not so much the Ohio Gas Light Association as it is the Gas Association. (Renewed applause.)

Mr. Doherty—Mr. President, I move a vote of thanks be tendered to President McIlhenny for his very painstaking work as the presiding officer at this meeting and for his uniform courtesy to the members of this Association; also, a vote of thanks to Secretary Jones for his earnest efforts in bringing about and carrying through to completion a very successful meeting. (Seconded, put and carried.)

It was then announced by the Chair that a cordial invitation had been extended to the Association by the Cleveland Gas Light and Coke Company to visit its plant during the afternoon.

THE LABORER IS WORTHY OF HIS HIRE.

President-elect Stone—Gentlemen, we all know that the work of the Secretary is becoming greater and more arduous each year. In addition to the regular work devolving upon him as Secretary, he has had to shoulder the work of preparing and publishing the Proceedings of the Association for the last three years in book form. His present salary is entirely too meager for the work required. I realize we will not be able to raise it to a sum commensurate with the services rendered, but I feel that, as a slight testimonial of appreciation for his efficient services, his salary should be increased to $500 per year, and if some member will

make a motion to that effect, the Chair will certainly be very glad to entertain it.

Mr. Schwarm—Mr. President, it gives me great pleasure to move that the Secretary receive $500 a year hereafter.

Several Voices—I second the motion.

Mr. Jones—Mr. President and Gentlemen: I deeply feel this expression of your appreciation of my services. I am sure, however, that what I have done for the Association has been more a matter of love for the work and for the Association than by reason of the dollars and cents which it brought to me. We have a good many financial obligations to meet and the Association is taking on some new lines of work which will involve the expenditure of money, so that while I would like to have the increased pay, I hardly believe the Association is in a position to stand it just now. I, therefore, would prefer that the salary remain the same as heretofore.

Mr. McIlhenny—We all know it is not a question of money with Mr. Jones, for we realize that the increase suggested is in no way commensurate with the work performed by him.

Mr. Doherty—The Association during the past year has been fortunate enough to secure the moral and financial support of a very large number of prominent gas men throughout the country. There is no doubt whatever that we can take care of this small additional expense, and also meet all other obligations ahead of us, provided we can get the earnest support of the progressive gas men of the country and induce them all to become members of our Association. I realize we have no other means of support. The only means we have are from the payment of dues. I realize that there are obligations ahead of us which are not reflected in the Association reports; but if the members will keep continually in mind its interests and actively co-operate with the officers of the Association in retaining our present membership, and in securing new members from among the progressive gas men of the country, there is no reason why we cannot meet all of our obligations very easily. I have been connected with a great many Associations but I have never seen better or more efficient work than Mr. Jones has rendered as our Secretary. No matter what we pay him he will be underpaid. He would be getting a certain amount in cash and rendering the balance of his services for love, and even if we pay him the increased amount contemplated by the motion the portion of his services which he would have to render for love would be greater than the percentage of his services for which he would be adequately paid. I, therefore, am most earnestly in favor of the motion and feel that Mr. Jones should be urged to accept it.

Mr. McIlhenny—I would like to say that during the last year I have had an excellent opportunity to observe what Mr. Jones has been required to do as Secretary. His labors have been constant and unremitting. They have been inspired by zeal and love for the Ohio Gas Light Association. I think it is entirely proper to make this addition to the salary, and I would say I do not believe the difference between the salary previously paid and the salary contemplated in this motion will offset the extra clerical expense which will be required by this vast amount of additional work which Mr. Jones will be required to perform by reason of the new lines of investigation and research we are now pursuing. [The motion was then unanimously adopted.]

The Secretary—Mr. President and Gentlemen, I assure you I appreciate this expression of good will on your part very much. I can only say that I will continue to do "My level best." (Applause.)

On motion, the meeting was then declared adjourned.

Recent Electhrochemical Developments.[1]

Production of Sodium Hydroxide.—Two patents granted on May 10 to Mr. Blackmore, of Mt. Vernon, N. Y, relate to the electrolytic production of sodium hydroxide. The process described by him in one of the patents is in its essential points similar to the well-known Castner-Kellner mercury cathode process, which is in actual operation on a large scale. Various modifications have been suggested for this process, relating especially to the method by which the cathodically formed sodium amalgam is removed from the electrolyzing cell for the production of sodium hydroxide in another cell. For instance, Bell proposes to use for this purpose the atmospheric pressure of the gases developed in the cell; his process has been tried on a large experimental scale by the Pennsylvania Salt Manufacturing Company at Wyandotte, Mich., during the last three years, but it does not seem to have yet been reduced to industrial practice. Blackmore in his present patent produces the movement of the mercury and amalgam through the various vessels in his apparatus solely by the differences of level of the various bodies of mercury and amalgam. These differences are maintained by a suitable adjustment of a float-fed and a float-controlled outlet, and of the height of the connecting pipes. The mercury, after the sodium has been removed from it, is pumped back into the first vessel which supplies mercury to the cathode in the electrolyzing cell.

The second patent of Mr. Blackmore refers to the production of sodium hydroxide from the cathodically formed sodium amalgam or sodium lead alloy (in the latter case a molten lead cathode being used as in the Acker process). In what follows we assume a molten lead cathode. Mr. Blackmore's apparatus consists essentially of an electrolyzing vessel with a diaphragm dividing it into two compartments. The anode compartment is in the center and contains fused sodium chloride on top of a floating diaphragm, which consists of magnetite broken into small fragments. The diaphragm floats on the molten lead cathode which extends into the outer vessel. The specific gravity of the diaphragm is greater than that of the molten electrolyte in the anode compartment, and smaller than that of the molten lead cathode. The lead sodium alloy produced by electrolysis, being lighter than lead, continually arises to the surface of the molten lead, and may be drawn off there. The author, however, considers it preferable to change it into hydroxide, and has found the following method suitable: Molten sodium hydrate is injected in a plurality of fine streams into the molten lead-sodium alloy, and is reduced by the sodium to sodium oxide with evolution of hydrogen which passes off. The sodium oxide arises and floats on the surface of the cathode and, remaining in a molten condition, it is continuously drawn off. To facilitate the oxidation of the sodium, a layer of loose granular conducting material, like iron, magnetite of ferro silicon, is arranged at the surface of the cathode. This loose material serves to distribute the streams of sodium hydrate and bring them in thorough and intimate contact with the sodium in the alloy. "The oxidizing reaction is facilitated by the innumerable local couples due to the contact of the sodium and the relatively negative particles of iron, etc."

Battery Invention.—A patent granted to Mr. C. J. Reed, of Philadelphia, refers to the construction of a plate suitable for Planté formation. The plate consists of numerous corrugated panels with intervening strengthening ribs and side ribs, the exposed surfaces of the panels being corrugated so as to have a large surface. The plate is made by passing molten lead between corrugated rolls and subsequently subjecting the plate to lateral edgewise compression in order to reduce the grooves to the smallest practicable width.

A patent granted to Messrs. R. Fortun and E. Semprum, of Madrid, Spain, relates to a storage battery, the feature of which is the active material of the positive electrode. This active material is produced by electrolysis, between lead electrodes, of a saturated solution of oxide of lead in a lixivation of potassium hydroxide, rock candy and neutral potassium tartrate. By this action a brown substance is deposited on the anode for which the claim is made that 100 grams of this substance are capable of fixing 369 grams of oxygen. This active substance is used for the positive pole electrode in an accumulator with a solution of 17 parts of lead nitrate in 100 parts of water, acidulated with pure nitric acid until the solution registers 20° Baume.

A patent granted to Messrs. J. Noble and E. L. Anderson, of St. Louis, represents a new attempt at utilizing the heat of oxidation of carbon for the production of electrical energy. The cell consists of an aluminum plate and a carbon plate with an electrolyte of nitric acid, heated to 150° F. The cell is claimed to have an e. m. f. of 1.5 volts, the current flowing in the solution from the aluminum to the carbon. The following actions are assumed to take place in the cell. Oxygen is evolved at the aluminum anode without attacking it, while at the cathode the nitric acid is reduced to nitrogen peroxide, which oxidizes the carbon cathode, thereby forming carbonic acid gas and nitrogen oxide gas. The nitrogen oxide gas unites with the oxygen evolved at the anode and forms nitrogen peroxide gas, which passes into a condenser filled with a mass of moist carbon or coke, and is therein condensed to nitric acid, returning then to the battery. The claims of the inventors that without destruction of the aluminum plate electrical energy is produced at the expense of the change of the carbon plate to carbonic acid gas and at the expense of heat supplied from the cathode.

1. *Elec. World.*

SPECIAL ENGLISH CORRESPONDENCE.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, May 10th, 1904.

Stops, not Slots.—Price of Coal.—Outputs of Gas.

For some time past the slot meter has enjoyed an unrivalled reputation as the friend of that large class who have not the means, or who wish to avoid the risk, of buying an installation of gasfittings. This class, by the way, is very much more extensive, and includes many others, than the necessitous unfortunate who habitually comes to short commons at the end of the week. People of means, inhabiting luxurious residences, are frequently, from one cause and another, inclination or otherwise, of migratory habits, and do not trouble to provide gas appliances for a tenancy that may be reckoned in months. So the slot meter is something more than a means of selling out "pennyworths" to the poor. And in estimating the value of the slot, it is necessary to strip it of borrowed plumes. The free installation—that is free of first cost—has had more to do with the success of the system than the special advantage of paying in small instalments. The objection to first outlay is stronger in the case of slot customers than others, and it is generally admitted that the appliance cannot be introduced without the support of a free installation.

But the peaceful omnipotence of the slot was rudely disturbed a few weeks ago, by a paragraph in the speech of the Chairman of the Croydon Gas Company, which set forth that the directors had for some time past been trying two systems, the stop and the slot, and that they preferred the former and intended to adopt it exclusively. The stop meter was brought out 16 years ago but attracted very little attention, and was almost forgotten. There are probably not half a dozen companies using it. So the surprise in gas circles was great. The *Journal of Gas Lighting* at once hurried a representative off to Croydon to find

out all about it. And he came back with an argument in favor of it which extended to 11 columns in the said publication, exclusive of correspondence.

The working of the slot meter is generally well known, but it may be desirable to explain that the stop meter is simply an ordinary meter with a stop added—a simple mechanical device that does not add substantially to the cost—and the stop can be set forward by means of a key, which, of course, is retained by the company. The collector calls at frequent intervals, say once a week, and collects in advance the price of say 500 cubic feet of gas at the usual rate, plus a charge of 2d. to 4d. to cover rent of stove and fittings. He then sets the slot forward 500 feet. As soon as that quantity is consumed the stop comes into operation, and no more gas can be had till it is set forward by the collector, who, of course, requires the price of a further 500 or other desired quantity. In practice, supposing the collector calls weekly, care is taken to pay for rather more than enough gas than is likely to be required during the week.

The system offers special advantages to the sellers of gas that are not to be despised. The money passes direct to them, without first undergoing a sort of limbo, represented by the period between the actual insertion of the coin in the slot and the next clearance of the cash box. The company are also enabled to make sure of a remunerative return on their investment in meters, fittings and stoves, irrespective of the consumption of gas, a fact that will commend itself to those who complain of a low average. Four pence a week appears to be a very moderate charge for a complete outfit costing say £6; but it represents 16s. 8d. per annum, a much larger return than is obtainable from the slot; 15,000 cubic feet is a fair average for the annual consumption of a slot consumer, so to secure that rental he would have to be charged 1s. 2d. per 1,000 cubic feet in excess of the ordinary rate, a proceeding that would at once cause indignation. The fact of the rental being separate from the gas enables a separate and distinct arrangement in any and every case for exactly what the customer requires in the way of appliances, ranging from a meter only to a complete outfit, including cooker, gas fires, etc. Against these points must be set the extra cost of collection and keeping accounts. A staff three or four times larger than is required for the slot system must obviously be necessary, seeing that the till need only be cleared once in 4 to 6 weeks, whereas, in addition to the weekly visit of the collector, something in the way of an independent check on that individual is obviously desirable, such as reading the meter indexes once a quarter.

The stop meter certainly presents the only satisfactory means of dealing with that undesirable class which has been described as "unprofitable"—people who do not use enough gas to pay a fair interest on the investment for meter stove or fittings. And it will also be welcomed by consumers who considerably exceed the paying average at which the slot meter is set and, therefore, are at a disadvantage. But at the same time it revives the objectionable feature of the "collector." People do not like being "waited upon" for payment, and the stop system is too close a relation to short period collections, such as have been in vogue at Manchester and other places for many years, to attain anything like the popularity attained by the slot meter. In fact it appears a very short step from the stop meter, to a system of weekly payments with ordinary meters.

As regards the important question of price of coal, gas companies will probably have no difficulty in renewing their contracts at prices 6d. or more per ton below current rates. The Edinburgh Gas Commissioners have purchased 84,000 tons of cannel and 117,000 tons of common coal at an average reduction of 7d. It is reported that most of the large contracts fos the Metropolitan Gas Companies are concluded, and that the terms show an average reduction of 6d. per ton on the present prices. This is sufficient to give a good indication of which way the wind blows. So the gas industry is not likely to be disturbed in the immediate future by troubles with regard to staple material, and will be at liberty to continue the work of progress that has been such a marked feature of the last two years. The past season has as a rule been a good one for business and it may be anticipated that considerable activity will prevail in the matter of extensions during the ensuing summer.

Considerable interest attaches to the pronouncement of Mr. J. T. Westcott's views on "Why English Gas Outputs are Larger than in Other Countries," as being the utterances of a gentleman who occupies a position that affords some facility in arriving at a judgment on this important part. The output is the thing needful. Given a good, steady trade, and the management can take full advantage of every modern improvement. But without activity in the sales' department, economy and skill in manufacturing, purifying and distributing are of no avail. The question of outputs is therefore a fascinating study, and the most prominent feeling on perusing the statistics and comments made by this authority, is one of disappointment at the indefinite character of his conclusions. One might conclude that according to his figures the output of gas is independent of just those details to which a gas engineer would be inclined to attach the most importance, such as price and quality. I can only speak of the British outputs. Of these it will be observed that neither of the four concerns who sell the cheapest gas can boast of much in the way of superiority as regards sales per head or per consumer. Widnes leads by a long way in the matter of price, but in no other way, and Widnes is a smoky, factory town, where conditions might be supposed to be particularly favorable to consumption of gas. As regards the average consumption per consumer this data is absolutely valueless when spread over the whole district, because a few large consumers unduly distort the average. Comparing Birmingham and Liverpool, for instance, the average appears nearly double in favor of the former. Yet it would not be safe to conclude that the average Birmingham artizan household uses substantially more gas than a similar household in Liverpool. One thing that certainly influences the output of gas stoves is the price of coal or other recognized fuel, and if this was shown by the side of the price of gas it might elucidate the subject. It is remarkable that the South Metropolitan Gas Company, supplying a middle class residential district for the most part, having with the exception of Widnes the largest proportion of slot meters, and selling gas at the highest price, when quality is taken into consideration, are yet able to make such an excellent showing. There are many smaller towns selling gas at prices up to 3s. or so when the consumption per head and per consumer would compare favorably with the average. This quite supports the view expressed by Mr. Knight that the quantity consumed depended largely on the work done to get the business. This is the more important question. Are the high sales at Birmingham, Manchester and Sheffield due to natural or artifical circumstances? Are they the result of business energy and push, or a spontaneous development? And do they represent the maximum gas consuming capacity of those districts? Is there any district in England or elsewhere that can be regarded as so fully saturated that an efficient canvasser could not sell another foot? I do not know how it is in other countries, but in England the rule is to run a long way behind the business instead of keeping abreast with it. The majority are held back and only allowed to expand at a rate dependent on financial considerations, and there is more attention towards keeping down the capital invested than towards pushing up the sales per capita or per consumer. In most English towns canvassing is an unknown thing, and many managers could tell that they are expected to keep extensions within the limits of the current expenditure of the year. It is very interesting to know what the sales are under existing circumstances. It would be still more interesting to know what they would amount to after a sufficient period of energetic and efficient cultivation and development. In most districts where the electric light has been introduced an increased sale of gas is reported. This practically means that the management did not care to have it said that electricity had prejudiced their sales of gas and that they roused themselves to a sufficient extent—usually a very slight exertion—to get new business sufficient to avert such a contingency.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

WE are in receipt of the last catalogue printed by the Messrs. Fairbanks, Morse & Co., of Chicago, which well and readily explains the wares in which that corporation deals—scales, pumping machinery and the like.

AN interesting exhibit at the World's Fair, St. Louis, Mo., is that put out by Messrs. William Johnson & Sons, of Leeds, England, who display a complete fuel briquette plant in active operation.

THE Gas Machinery Company, of Cleveland, O., is under contract to furnish the Kentucky Heating Company, of Louisville, Ky., with exhausting, tar extracting, condensing and washing machinery up to caring for a daily output of of 2,000,000 cubic feet.

A CORRESPONDENT in Des Moines, Ia., forwards the following: "The advertisement-writing and illustrating competition instituted and conducted by the Capital Gas Light Company of this city has been decided. The awards were as follows: First prize, Miss Florence Sprague; second, Miss Lucy E. Edwards; third, Misses Maude Stockham, Mary Denman and Grace Gee. The values of the prizes were: First, $5; second, $3; third, $2. Owing to the excellence of all the advertisements

submitted, it was decided to award $1 each to all the art students competing. The contest was a spirited one."

MR. WM. S. ROWE, President of the First National Bank of Cincinnati, has been elected a Director of the Cincinnati Gas and Electric Company, vice the late General Andrew Hickenlooper.

THE Consolidated Gas Company, of Baltimore, Md., has made public the following figures respecting its traffic for 1903:

Gross earnings	$2,231,963.73
Operating expenses	1,380,715.76
Net earnings	$851,247.97
Interest charges	438,616.68
Earnings for dividends	$412,631.29
Dividends paid	330,000.00
Surplus	$82,631.29

Last year the Company spent $75,000 additional for coal, due to the great coal strike, and $80,000 for other expenses which are not applicable for 1903, and would indicate additional earnings. Here are the gross earnings for the past three years:

1901	$1,689,886.26
1902	1,972,861.22
1903	2,231,963.73

The following figures for four months of this year are given as a comparison:

	1904.	1903.
January	$67,302.38	$51,204.63
February	32,210.79	30,467.67
March	31,873.85	24,408.42
April	37,000.00	24,800.00

A DIVIDEND of 3 per cent. has been declared on the preferred stock of the Columbus (O.) Light and Heating Company, payable June 15.

MR. F. D. LLOYD, of Houston, Tex., is endeavoring to secure a franchise for the right to supply gas in Brenham, Tex.

MR. LAMBERT V. ELLIOTT, a prominent resident of Penn Yan, N. Y., was buried from his former home in that city, the morning of the 18th inst. He died in Washington, D. C., Saturday morning the 14th inst. He was in his 87th year, and was instrumental in founding the Penn Yan Gas Light Company, which he served as Superintendent for several years.

THE following is the text of the resolutions adopted by the Executive Committee of the Consolidated Gas Company of this city, respecting an issue of debenture bonds convertible into stock after 3 years:

"That the capital stock of this Company be increased from $80,000,000 par value to $100,000,000 par value, and that such increase, or the proceeds thereof, be used for providing additional improvements and betterments, the acquisition of additional property, the payment of any indebtedness of the Company, whether now existing or hereafter contracted, and for such other purposes as may be authorized by the stockholders.

"That, if such increase in the capital stock be authorized, the Company shall forthwith issue its 6 per cent. coupon debentures to the extent of $20,000,000, par value, payable on July 1, 1909, and that the holders thereof shall have the privilege upon the expiration of 3 years from the date thereof, namely on July 1, 1907, and on any subsequent interest date prior to July 1, 1909, of converting the same into the capital stock of the Company at its par value, and that the increased capital stock shall be reserved for that purpose.

"That the $20,000,000 par value of debentures to be issued forthwith as aforesaid shall be offered, ratably, to the stockholders of record at par, payable in three installments, the first two of 30 per cent. each and the last of 40 per cent., and that temporary receipts be issued for the amount of each instalment, convertible at the option of the holder into debentures; and that the time of offering the debentures and the terms and conditions of such offer be prescribed by the Trustees."

THE Westchester (N. Y.) Lighting Company is extending its mains along the Milton road for the supply of gas to the residents of Sand Park.

THE rate for gas used for fuel in Bellefontaine, O., has been reduced to 50 cents per 1,000 cubic feet. The plant at Bellefontaine is controlled by the municipality.

A CORRESPONDENT in Trenton, N. J., forwards the following: "After a lapse of several years, Newtown, Pa., may again be supplied with gas in the not distant future. Some days ago the Council passed an ordinance giving the Pennsylvania Gas Company the privilege of laying mains and pipes in the borough. The Company proposes to supply the boroughs of Newtown, Langhorne and Morrisville from a central plant.

THE proprietors of the Pueblo (Col.) Gas and Fuel Company have arranged for the construction of a coal gas plant in addition to the present water gas system.

MR. WALTER W. RICHARDSON has been appointed Superintendent of the Buffalo (N. Y.) Natural Gas Company, vice the late Mr. C. T. Sloan. Mr. Richardson was formerly Superintendent of the Eastern Ohio Gas Company, of Cleveland.

AT the annual meeting of the shareholders in the Port Huron (Mich.) Gas Company the officers elected were: Directors, J. T. Lynn, T. H. Eaton, J. B. Book, A. D. Bennett, P. H. Phillips, J. C. Sloan and L. A. Sherman; President, J. T. Lynn; Vice-President, A. D. Bennett; Secretary, J. B. Book; Treasurer, T. H, Eaton.

THE Massachusetts Board of Gas and Electric Light Commissioners has granted the Clinton (Mass.) Gas Light Company the right to increase its capital stock in the sum of $50,000.

THE Commissioners also authorized the proprietors of the Worcester Gas Light Company to increase its stock. The upset price was put at $200 per share.

MR. HERBERT S. BAER, Manager of the Portage Lake (Wis.) Gas and Coke Company, declares that his people mean business in respect of the establishing of a plant for the supply of gas to the residents of the Portage Lake district. Let us hope so.

THE presiding elders, who control the destinies of and the profits that come from the ownership of Ocean Grove, N. J., have managed it so that the "Grove" shall not have gas this season "for any purpose or use whatsoever."

THE Chicago Heights (Ills.) Gas Company has just concluded a well planned series of lectures demonstrating the use of gas for cooking, etc. The series covered the last week of May, the lecturess was Mrs. J. D. Gibson, of Dayton, O., and the lecture room was in the Thomas Opera House. The lectures were well attended.

AT the first annual meeting of the shareholders in the Vincennes (Ind.) Gas Company, the officers chosen were: Directors, Dudley E. Waters, J. B. Pantlind, C. E. Bardsen, C. W. Watkins, Edward M. Deane, Dwight Smith, Geo. N. Browning, Henry T. Heald, W. C. Winchester, J. L. Bayard, Jr., James Emison, Chas. F. Bierhaus and R. E. Purcell—a solid thirteen.

MR. R. C. CONGDON, under the recently perfected combination of the Frederick (Md.) Gas Company and the Frederick Electric Light and Power Company, will be the active manager of both properties.

THE plant of the North Shore Gas Company, in Waukegan, Ills., is to be enlarged.

MR. F. P. FAIRBANKS has resigned the position of Assistant Superintendent of the gas division of the municipal lighting works, Holyoke, Mass.

AT a recent meeting of the body locally known as the Hartford (Conn.) Street Board, it was

Resolved, That the Board of Street Commissioners hereby agree to contract with the Hartford Electric Light Company for the furnishing and maintenance of 750 electric arc lamps of 6 and 8-tenths amperes each in streets and public grounds of the city of Hartford, for 5 years, at an annual cost of $70 for each such arc lamp; details to be hereafter settled and stated."

THE California Gas and Electric Corporation has paid its initial dividend. It was at the rate of ¼ per cent.

AT the annual meeting of the Owosso (Mich.) Gas Light Company it was ordered that, from June 1st, the selling rate should be put at $1.20 per 1,000 cubic feet, with a quantity rebate (effective May 31, 1905) as follows: 200,000 to 300,000 cubic feet, 5 cents per 1,000; 300,000 to 400,000 cubic feet, 10 cents per 1,000; 400,000 to 500,000 cubic feet, 20 cents per 1,000; 600,000 cubic feet and over, 30 cents per 1,000.

THE United Gas and Electric Company, of Sedalia, Mo., which is now in control of the gas and electric lighting interests of that city, is owned by Messrs. Lewis V. Rumsey, Jr., Horace S. Rumsey, Joseph Clarke, Lewis P. Andrews and Moses Rumsey.

IT looks that the near future rates for cast iron pipe will be at least 8 per cent. lower than those quoted 6 months ago.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

CHAS. E. SANDERSON,
MANAGER.

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OHIO GAS LIGHT ASSOCIATION.

NOTIFICATION RESPECTING ADVERTISING.

Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:

New York—American News Co., 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, MAY 30, 1904.

The Market for Gas Securities.

Dealings in city gas shares were of the odd order since last time of reporting. Consolidated sold down to 205½ to 206, which were the closing prices to-day (Friday). It seems an odd feature that, while the quotation for regular stock is decidedly weak, the figures for "rights" are fairly well maintained. The latter closed at 15½ to 16. Perhaps it would be a good scheme to buy "rights." Those on the inside are not letting any of their "rights" go to others.

Brooklyn Union is quoted at 212 to 218, and if there is a better purchase in the gas share market than the named shares at the quoted offering price, we would like to be advised concerning such security. Baltimore Consolidated is again 70 bid. It is a buy at the figures, and so is Peoples, of Chicago, which closed at 95 to 95½. Cincinnati keeps well up to its recent high quotations, and Lacledes are apparently altogether on the doubtful list. The gas bond market is dull, simply for the reason that holders are not satisfied with the prices bid.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

MAY 30.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	205½	206
Central Union, Bonds, 5's	3,000,000	1,000	108½	108½
Equitable Bonds, 6's	1,000,000	1,000	105	..
" 1st Con. 5's	2,300,000	1,000	118	120
Metropolitan	658,000	..	108	112
Mutual	3,500,000	100	270	300
Municipal Bonds	750,000	..	..	..
New Amsterdam Gas Co.. Bonds, 5's	11,000,000	1,000	105½	106
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	34	..
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	..	..	..
Northern Union, Bonds, 5's	1,250,000	1,000	102¾	105½
New York and East River.. Bonds 1st 5's	3,500,000	1,000	109½	111
" 1st Con. 5's	1,500,000	..	106	108
Standard	5,000,000	100	125	13
Preferred	5,000,000	100	145	155
Bonds, 1st Mortgage, 5's	1,500,000	1,000	116	117
Yonkers	299,650	500	130	..
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	212	218
" " Bonds (5's)	15 000,000	1,000	113	115
Bay State	50,000,000	50	⅛	3/16
" Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works..	450,000	100	28	30
" 1st Mtg. 5's	509,000	1,000	93	96
Boston United Gas Co,— 1st Series S. F. Trust..	7,000,000	1,000	82	85
2d " " " ..	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	3¾	4
" " Bonds, 5's	5,250,000	1,000	13¾	..
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104½
Cincinnati Gas and Electric Co	29,500,000	100	100¾	101¼
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	101	101½
Columbus (O.) Gas Lt. & Heating Co	1,682,750	100	88¾	89½
Preferred	3,026,500	100	107⅞	109
Consumers, Toronto	1,700,000	50	218	225
Consolidated, Baltimore..	11,000,000	100	70	70¼
Mortgage, 6's	3,600,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's..	1,490 000	..	..	112
Consolidated Gas Co. of N.J.	1,000,000	100	15	17
" Con. Mtg. 5's	880,000	1,000	86	90
Consolidated G. & E. Co.'s. Little Falls, N.Y.	20,000	100	..	100
Bonds	75,000	..	..	100
Detroit City Gas Co	4,825,500	50	..	50
" Prior Lien 5's	5,603,000	1,000	99½	100
Detroit Gas Co., 5's	351,000	1,000	75	75½
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	39	40
Fort Wayne	2,000,000	..	..	..
" Bonds	2,000,000	..	35	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	245	265
Hudson County Gas Co., of New Jersey	10,500,000	..	67	68
" Bonds, 5's	10,500,000	..	106½	104½
Indianapolis	2,000,000	..	60	70
" Bonds, 6's	2,650,000	..	103½	106½
Jackson Gas Co	250,000	50	73	75
" 1st Mtg. 5's	290,000	1,000	101	102¾
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	90	100
Preferred	2,500,000	100	80	100
Bonds	10,000,000	1,000	109½	110
Lafayette Gas Co., Ind.	1,000,000	100	..	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	135	140
Madison Gas & Elec. Co. " 1st Mtg. 6's	350,000	1,000	107½	108½
" 6 per cent. scrip, due 1910	100,000	25	85	87
Montreal, Canada	2,000,000	100	218	184¾
Nashville Gas Lt. Co.	1,000,000	100	110	..
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	4,600,000	..	105	105¾
New Haven	1,000,000	25	64	70
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	95	95½
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	.
Rochester Gas & Elec. Co..	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	87½	90
San Francisco, Cal.	15,800,000	100	58¼	58¾
St. Joseph Gas Co. " 1st Mtg. 5's	751,000	1,000	92	96½
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	113	116
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Syracuse, N. Y.	1,975,000	100	46	48
Bonds	2,047,000	1,000	94	96
Washington, D. C	2,500,000	20	25⅞	28⅞
First mortgage 6's	600,000	..	..	..
Western, Milwaukee	4,000,000	..	..	..
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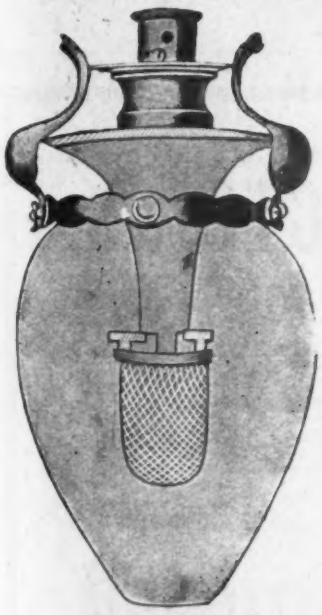

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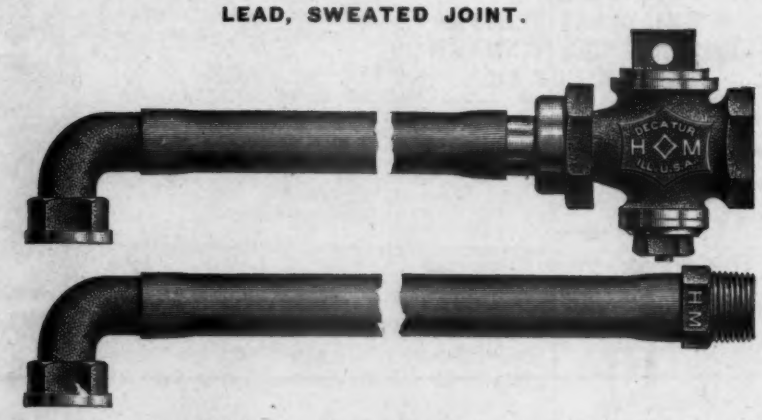

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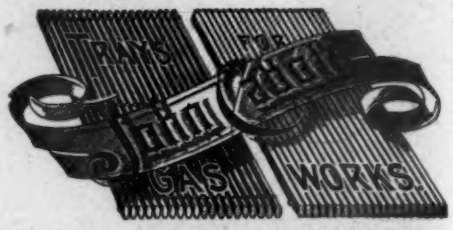

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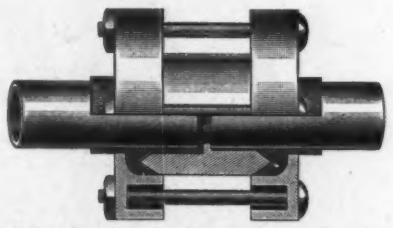
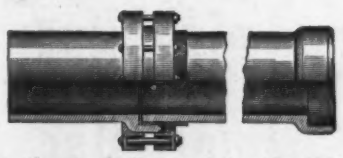
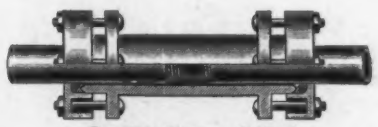


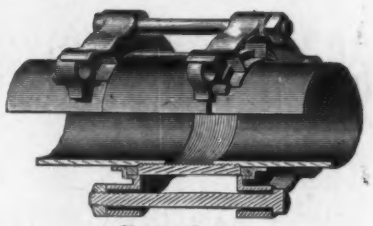
Insulating Coupling for Wrought Iron Pipe. Style 5.



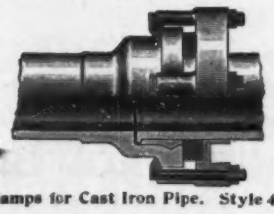
Insulating Coupling for Dresser Bell and Spigot Cast Iron Pipe. Style 6.



Regular Sleeve. Style 2.



Clamp. Style 4.



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My Insulating Coupling prevents the destruction of pipe by electrolytic action, in either water or gas lines.

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BY UTILIZING A

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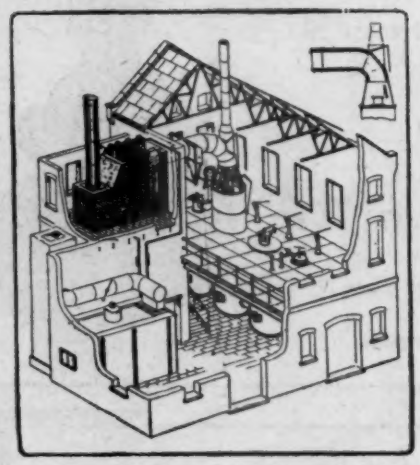

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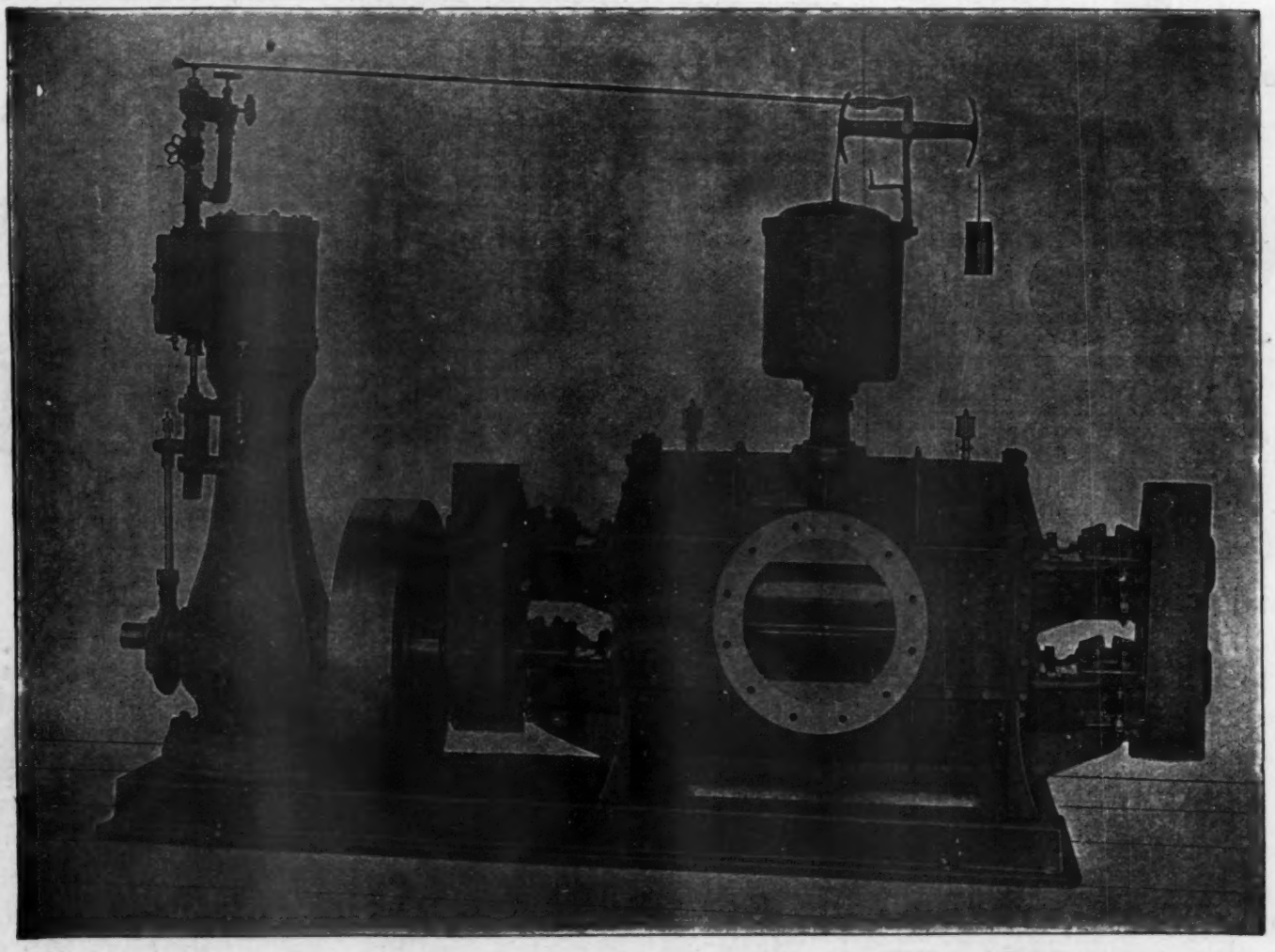

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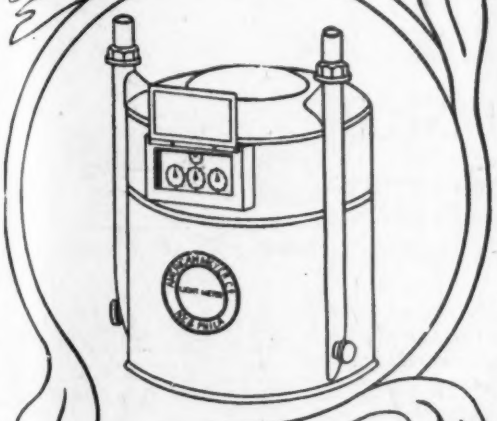
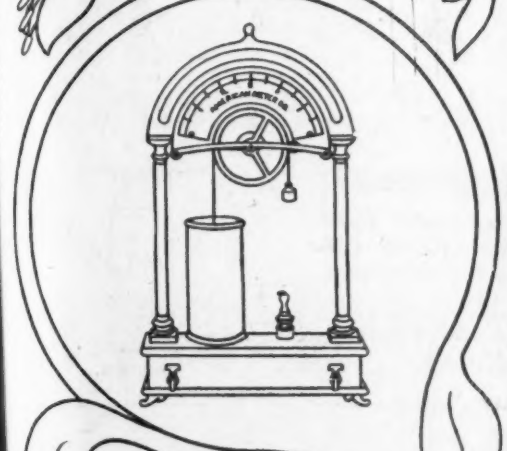
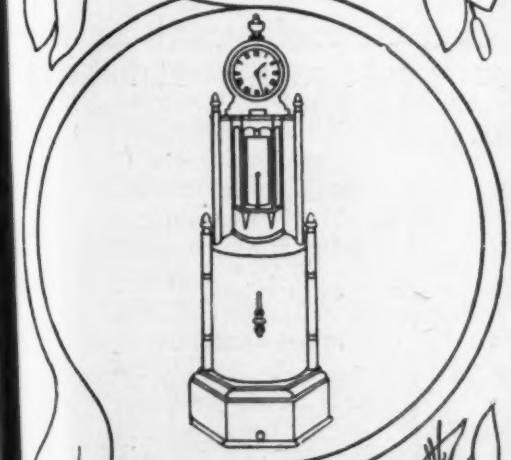
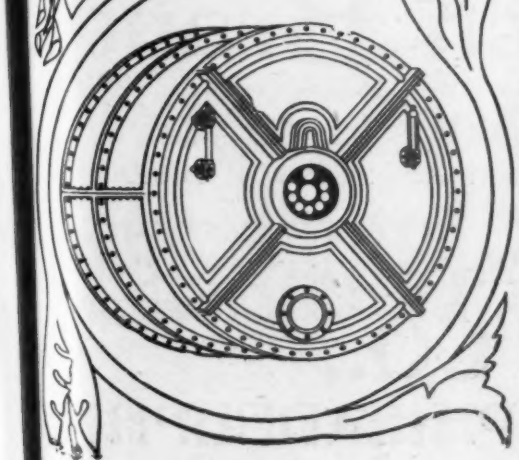
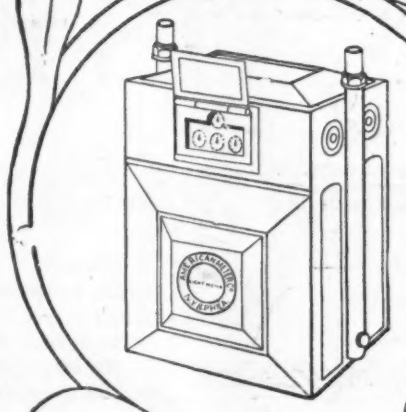
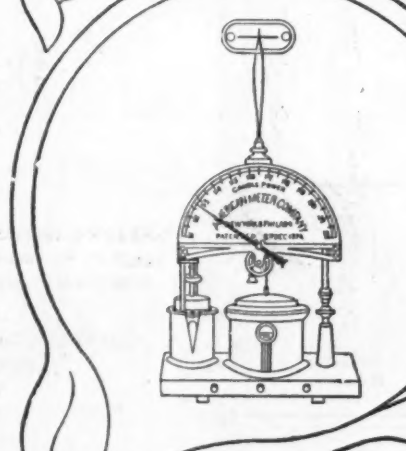


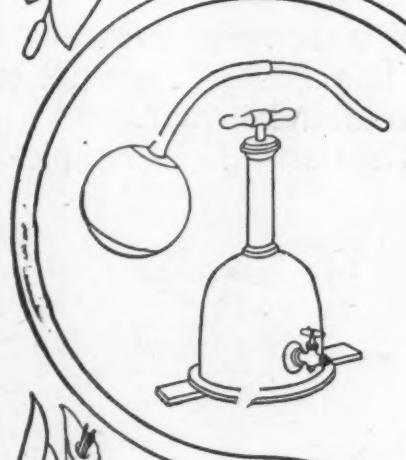


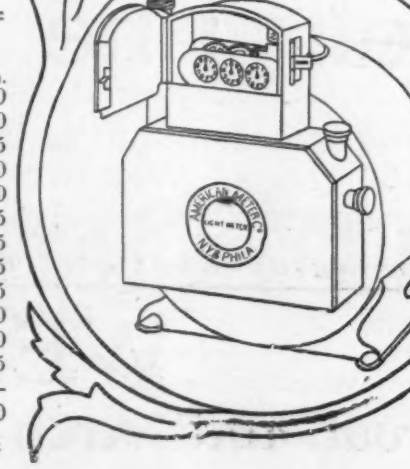












PUBLIC LIGHTING TABLE.

JUNE, 1904.

Day of Week.	Table No. 1. FOLLOWING THE MOON. Date.	Light.	Extinguish	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Light.	Extinguish.
				P.M.	A.M.
Wed.	1	7.50 PM	11.10 PM	7.15	3.15
Thu.	2	7.50	11.40	7.15	3.15
Fri.	3	7.50	12.20 AM	7.15	3.15
Sat.	4	7.50	12.50	7.25	3.15
Sun.	5	8.00 LQ	1.20	7.25	3.15
Mon.	6	8.00	1.50	7.25	3.15
Tue.	7	8.00	2.20	7.25	3.15
Wed.	8	8.00	2.50	7.25	3.15
Thu.	9	8.00	3.30	7.25	3.15
Fri.	10	8.00	3.30	7.25	3.15
Sat.	11	8.00	3.30	7.25	3.15
Sun.	12	8.00	3.30	7.25	3.15
Mon.	13	8.00 NM	3.30	7.25	3.15
Tue.	14	8.00	3.30	7.25	3.15
Wed.	15	8.00	3.30	7.25	3.15
Thu.	16	8.00	3.30	7.25	3.15
Fri.	17	8.00	3.30	7.25	3.15
Sat.	18	10.10	3.30	7.30	3.15
Sun.	19	10.50	3.30	7.30	3.15
Mon.	20	11.30 FQ	3.30	7.30	3.15
Tue.	21	12.00	3.30	7.30	3.15
Wed.	22	12.40 AM	3.30	7.30	3.15
Thu.	23	1.20	3.30	7.30	3.15
Fri.	24	2.00	3.30	7.30	3.15
Sat.	25	2.40	3.30	7.30	3.15
Sun.	26	No L.	No L.	7.30	3.15
Mon.	27	No L. FM	No L.	7.30	3.15
Tue.	28	No L.	No L.	7.30	3.15
Wed.	29	8.00 PM	9.40 PM	7.30	3.15
Thu.	30	8.00	10.20	7.30	3.15

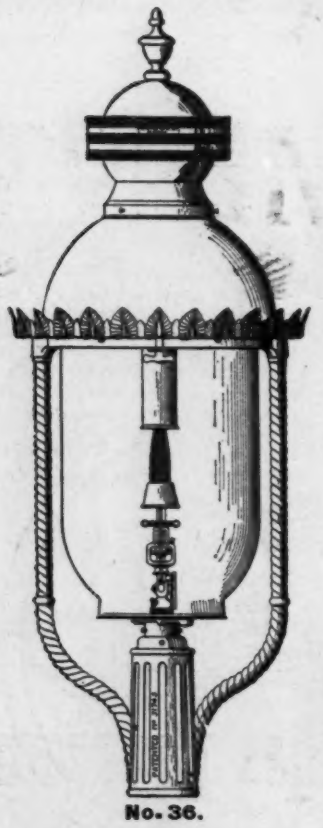
TOTAL HOURS LIGHTING DURING 1904.

By Table No. 1.	Hrs. Min.	By Table No. 2.	Hrs. Min.
January	225.00	January	423.20
February	205.40	February	367.40
March	187.40	March	355.35
April	169.50	April	298.50
May	152.30	May	264.50
June	137.20	June	234.25
July	138.50	July	243.45
August	151.00	August	280.25
September	164.40	September	321.15
October	191.30	October	374.30
November	210.30	November	401.40
December	237.10	December	433.45
Total, yr.	2171.40	Total, yr.	4000.00

NEW YORK, 97 Liberty Street.
BOSTON, 814 Beacon Building.
PHILADELPHIA, Broad and Arch Streets.
ST. LOUIS, 712 Roe Building.
CHICAGO, Foot of Orleans Street.
SAN FRANCISCO, 712 Polk Street.

WELSBACH STREET LIGHTING COMPANY

.... OF AMERICA ....



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and Operates the

Welsbach System of Street Lighting,

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POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.

No. 38.

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The formula is simple-

THIS SHIELD IS THE WELSBACH TRADE MARK.

IT IS A GUARANTEE AND A PROTECTION.

Sell The Welsbach Brands.

The imitation stuff is bad for the customer---which is bad for you.

The genuine Welsbachs---Burners or Mantles---make satisfied customers-keep customers---MAKE NEW ONES.

And your profit isn't merely dollars and cents.

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Chicago, Ills.	Newark, N. J.	Cicero, Ills.
Amesbury, Mass.	Washington, D. C.	Chicago (Ogden Co.)
Aberdeen, S. D.	Boone, Ia.	Easton, Pa.
Winsted, Conn.	Pueblo, Col.	Lawrence, Mass.
Canon City, Col.	Charlotte, N. C.	Council Bluffs, Ia.
Schenectady, N. Y.	Fall River, Mass.	Chattanooga, Tenn.
Hagerstown, Md.	Duluth, Minn.	Tuckerton, N. J.
Malden, Mass.	New York (Mutual Co.)	Springfield, O.
Bridgeport, Conn.	Waltham, Mass.	Easton, Pa. (2d contract).
Albert Lea, Minn.	Dover, Del.	Mobile, Ala.
Brooklyn, N. Y.	York, Pa.	Conshohocken, Pa.
Kansas City, Kas.	Minneapolis, Minn.	Mason City, Ia.
Hempstead, N. Y.	Allentown, Pa.	

TOTAL SETS FOR 1903, ... 62
TOTAL DAILY CAPACITY, ... 62,950,000 cubic feet.
TOTAL SETS TO DATE, ... 508
TOTAL DAILY CAPACITY, ... 362,780,000 cubic feet.

The United Gas Improvement Company,

Broad and Arch Streets, Philadelphia.

Established 1858. Incorporated 1890.
CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas.
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Manufacturers of { GAS RETORTS . .
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RETORT SETTINGS

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Estimates Furnished on Application for Most Successful Style of Construction.

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Modern Coal Gas Plant,

With either Horizontal, Inclined or Vertical Retorts.

PATENTS APPLIED FOR.

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No. 2. Independent retort settings, taking all weight from retorts.

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WORKS, Perth Amboy, N. J.
OFFICE, 418 to 422 East 23d St., N. Y.

Clay Gas Retorts,
BENCH SETTINGS,
Fire Brick, Tiles, Etc.

GEROULD'S IMPROVED RETORT CEMENT

A Cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

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MANUFACTORY AT
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FIRE BRICK, FIRE CLAY, AND FIRE CEMENT.

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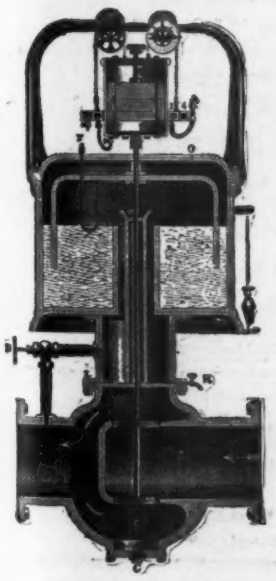

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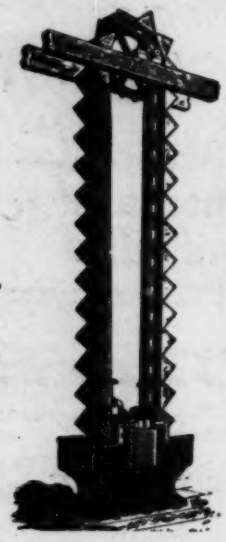

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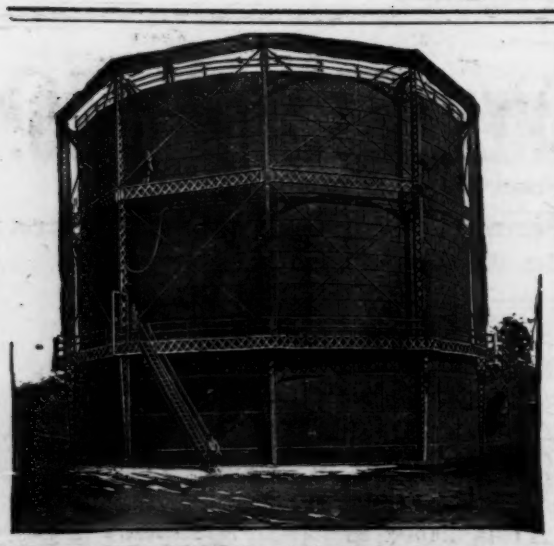

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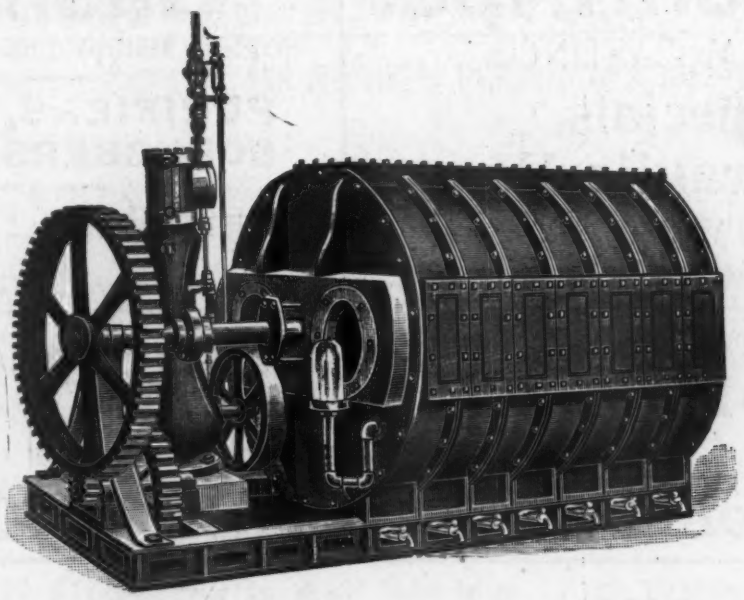

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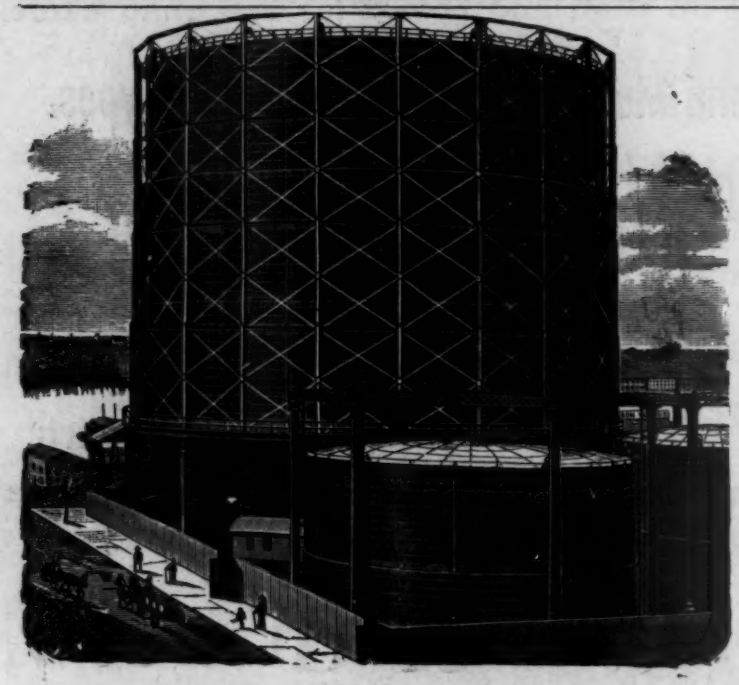

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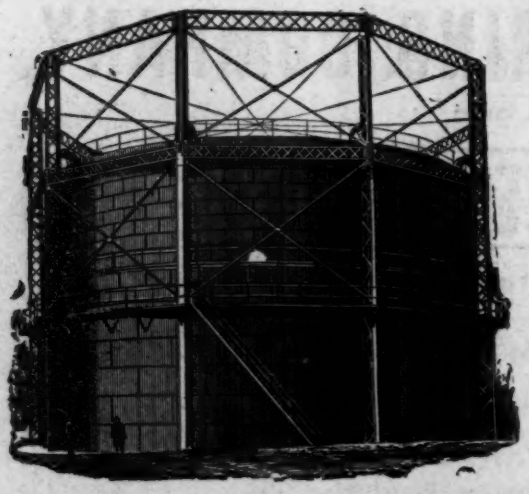

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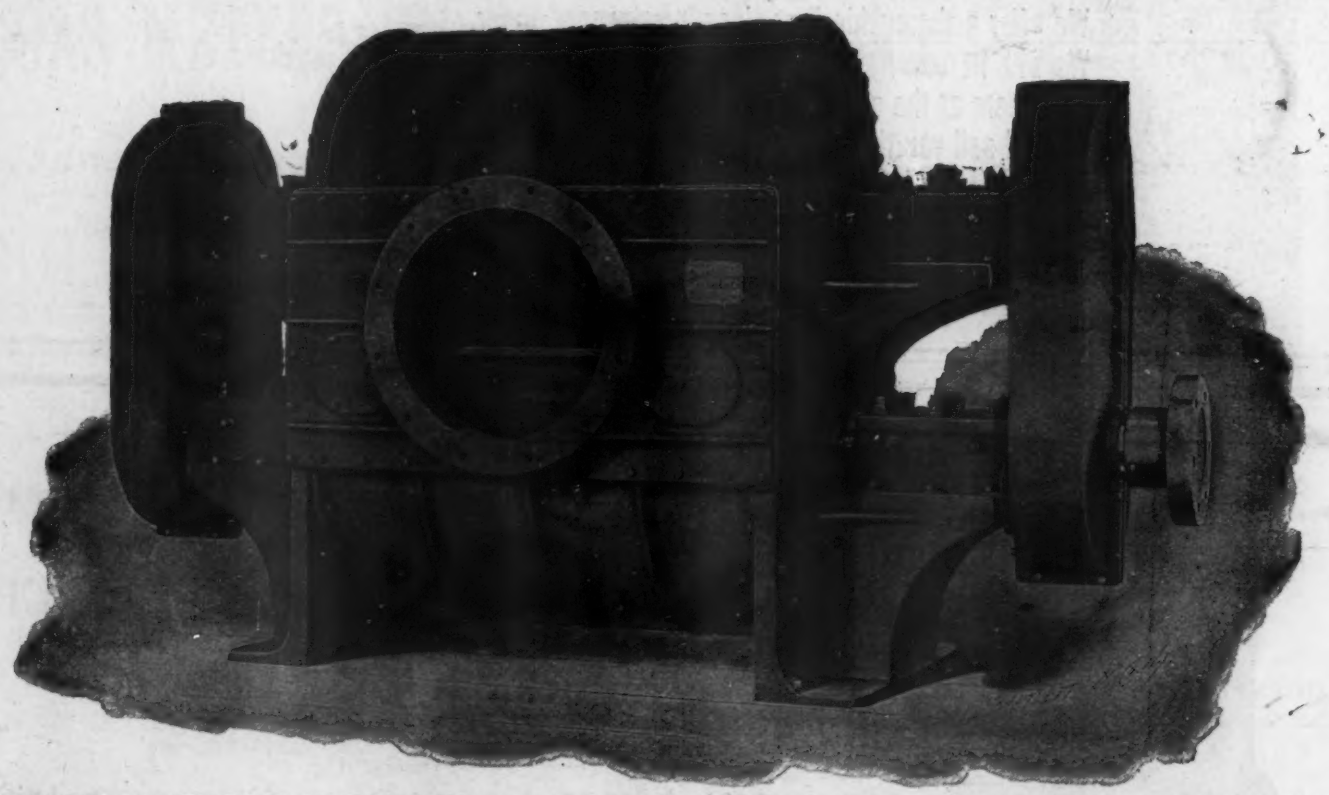

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